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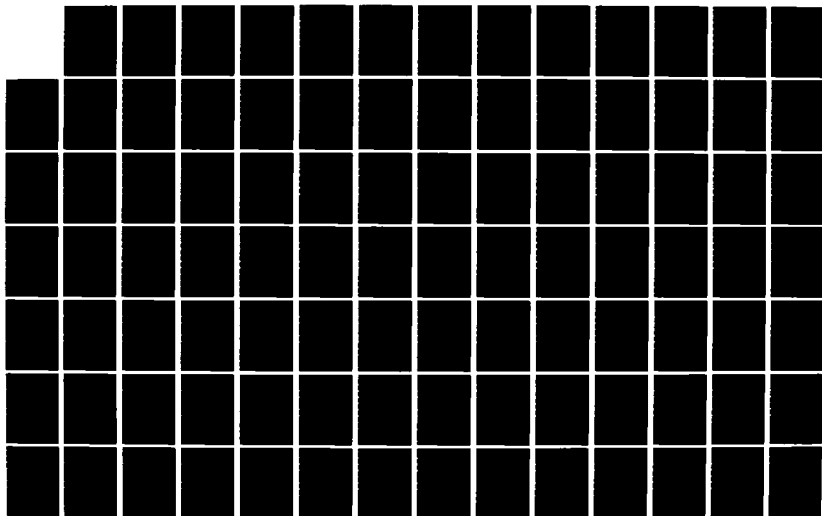
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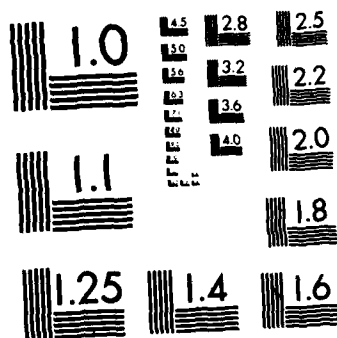
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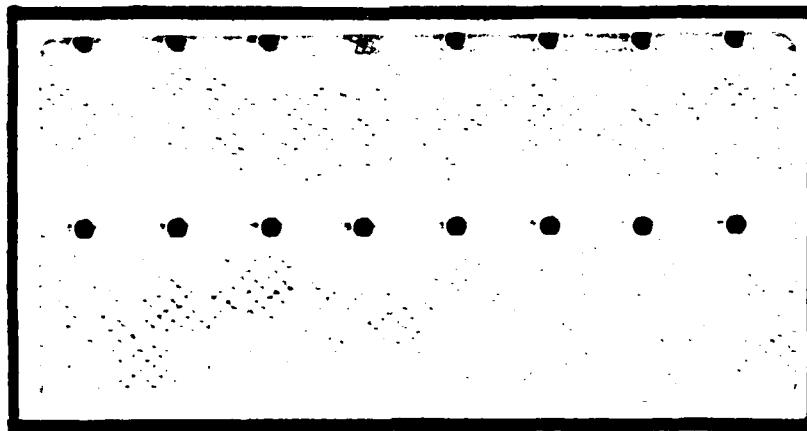
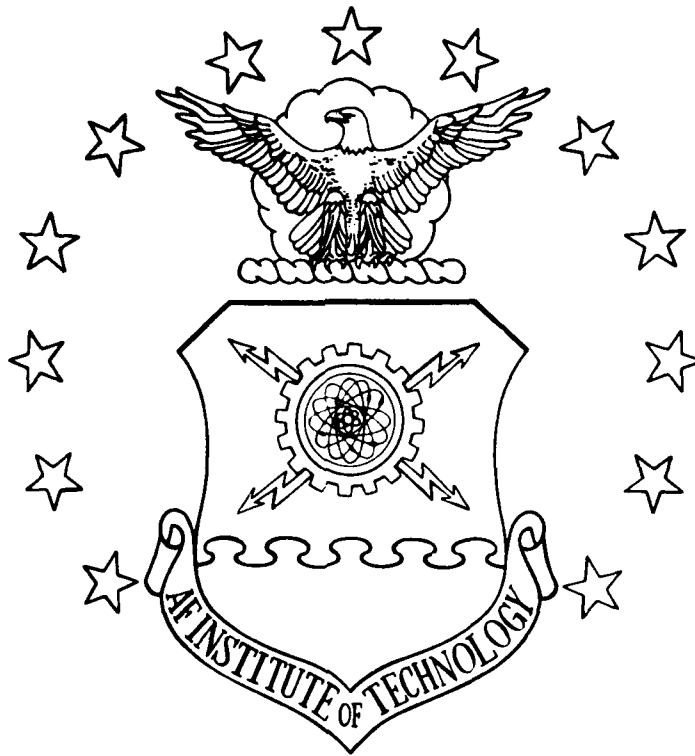
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Wright-Patterson Air Force Base, Ohio

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AN INFORMATION MANUAL
TO SUPPORT BASE ENGINEER EMERGENCY
FORCE (PRIME BEEF) TEAM DEPLOYMENT TO
EGYPT OR THE ARABIAN PENINSULA

Chal A. Martin, Captain, USAF

LSSR 32-83

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This thesis contains unclassified information identified and collected for Base Engineer Emergency Force (BEEF) teams deploying to Egypt or the Arabian Peninsula on short notice. Previously, no single document was available to give teams the regional and site-specific information needed to carry out their mission. Topics include Islamic religious, cultural, and business customs; regional health information; desert engineering considerations; climate; maps showing airfield locations, and concise descriptions of 240 airfields in the region that could support tactical operations. Each description includes airfield latitude and longitude, runway length, local relief, local vegetation, and airfield distance from nearby cities. The thesis is designed so that when its purely academic sections are removed, the remainder forms a self-contained, fully indexed deployment manual. The thesis concludes with the recommendation that similar manuals be produced for other possible deployment regions, with suggestions for making classified site-specific information available to deploying teams, and with a recommendation for adding computer generated graphics to aid deploying teams in base design.
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AN INFORMATION MANUAL TO SUPPORT
BASE ENGINEER EMERGENCY EMERGENCY FORCE (PRIME BEEF)
TEAM DEPLOYMENT TO EGYPT OR THE ARABIAN PENINSULA

A Thesis

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the
Degree of Master of Science in Engineering Management

By

Chal A. Martin
Captain, USAF

September 1983

Approved for public release;
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This thesis, written by

Captain Chal A. Martin

has been accepted by the undersigned on behalf of the Faculty of the
School of Systems and Logistics in partial fulfillment of the
requirement for the degree of

MASTER OF SCIENCE IN ENGINEERING MANAGEMENT

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TECHNICAL ADVISOR

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CHAPTER I

INTRODUCTION

Chapter Overview

This chapter contains a general background on the Air Force Base Engineer Emergency Force (Prime BEEF) mobile engineering team concept. The research problem relating to the Prime BEEF concept is outlined, and the purpose of this paper is stated. Also included are research objectives, assumptions, and the study's scope and limitations.

Background

In the early 1960's, the United States Air Force (USAF) established the Air Force Base Engineer Emergency Force (Prime BEEF) to provide civil engineering services for contingency operations worldwide (43:1-2). As fully described in later sections of this report, Prime BEEF teams consist of military engineers, architects, and engineering technicians prepared to deploy on short notice to support a variety of contingencies related to military conflict and natural disasters (43:14).

Prime BEEF teams in the continental United States (CONUS) are deployable anywhere in the world on a 28-hour notice. Their destinations may be as varied as remote airstrips containing no facilities (bare base sites) to fully operational airfields, where they will augment forces already in place (42:1-1). In many instances, their duties will include runway repair, war damage repair, force beddown, and

operation and maintenance of base facilities (43:14).

Problem Statement

In order for Prime BEEF teams to do their jobs well, they must possess two kinds of information: general engineering knowledge related to tasks they must perform, and information about the specific regions and specific sites where the work will be done. For example, the body of general engineering knowledge required to build airstrips includes principles of mechanics that apply whether the airstrip is located in Germany or Saudi Arabia. On the other hand, the type of airstrip to be built or the processes of building it will be strongly influenced by site-specific variables, including climate, soil types, local customs, health and sanitation conditions, availability of materials, and other factors that affect the planning and execution of every engineering project.

Under current deployment procedures, Prime BEEF team leaders do not receive the regional or site-specific information required to plan and execute a mission with maximum efficiency. Deployment notifications usually contain only minimal information such as message originator, addressee, teams required, transportation instructions, and departure time (5). Despite the fact that information about specific sites is needed for choices about what the team should take (critical construction materials, first aid supplies, clothing) and for preplanning of arrival activities (prioritized work lists, personnel work schedules), no single source is available to give team leaders the site information

they need to perform efficiently. Team leaders do not have time to locate and assemble sources of this information in the 28 or fewer hours between notification and deployment.

This problem was recognized by Headquarters, United States Air Force in inspections conducted at various Air Force bases between 2 February 1981 and 8 January 1982 (44:2).

Statement of Purpose/Objectives

The purpose of this study is to supply the information needs of deployed Prime BEEF teams by fulfilling four objectives:

1. Identify categories (topics) of site-specific information required by Prime BEEF teams to operate efficiently when deployed.
2. Collect information about these topics for specific, possible Prime BEEF deployment sites in the Middle East.
3. Design a concise field-manual format to transmit that information for rapid use under deployment conditions.
4. Illustrate this format by compiling the deployment manual for the specific deployment sites.

Assumptions

1. Prime BEEF teams will be deployed to a location with an existing airfield.

2. Team leaders know the name of the deployment airfield or at least know a fairly specific deployment area.

3. Deployment is politically feasible to all the countries included in this study or, if not currently feasible, might be possible at a later date.

4. Prime BEEF team members will be billeted at the deployment site.

5. Contact with nationals, although limited, will occur.

6. Prime BEEF team members will support a tactical mission. The weapon systems will be A-10's, F-4's, F-15's, or F-16's.

Scope and Limitations

The regional coverage of this study includes Egypt and the Arabian peninsula. Countries included in the Arabian peninsula are Saudi Arabia, the Yemen Arab Republic, Yemen Democratic Republic, Oman, the United Arab Emirates, Qatar, Bahrain, and Kuwait.

Categories of information in this study are part of a general list compiled from the opinions of military civil engineering officers knowledgeable about the Prime BEEF program (1; 39). Not all categories identified on this list as required for efficient Prime BEEF team operation are included. The most obvious type of data not included is classified information, including runway thickness, size and uses of facilities, and utilities layout.

No sources of information for this thesis are classified, although additional information is available in classified sources. The author believed unrestricted distribution of unclassified information outweighed the benefits of including some classified information. In addition, there are a small number of unclassified data that could not be obtained within the time and resource constraints of the project. There are five general types of unclassified sources used in this study: military regulations and manuals, U.S. Department of State publications, Defense Mapping Agency publications or maps, books and travel guides by private authors, and personal interviews.

The airfield lists in this study are the result of methodical cross checks between sources. Some of these airfields may no longer be active. If there was uncertainty, the airfields were included. Since this study is intended only for the use of Prime BEEF team members, inclusion of inactive airfields is useful, since inactive airfields might become deployment sites. However, this list should not be used for air navigation.

Organization of This Report

This report is designed so that it will meet both the academic requirements of a Masters thesis and the practical requirements of a field manual. As presented here, it contains the customary thesis organization and complete system of documentation and supporting apparatus. If it were reprinted without chapters 1, 2, 3, 14, and the documentation, it would be the manual intended for deployment use.

CHAPTER II

PRIME BEEF PROGRAM BACKGROUND

Chapter Overview

The purpose of this chapter is to provide information to the reader about the Prime BEEF program. The chapter includes definitions, a brief history, and an explanation of the Prime BEEF mission. Prime BEEF team composition and overseas Prime BEEF teams are also discussed. The chapter ends with an outline of deployment conditions, emphasizing wartime contingency tasks.

Prime BEEF Terms

The following alphabetical list of terms is provided for reference and background information:

Bare Base (BB). A base having a runway, taxiways, parking areas adequate for the deployed force, and possessing an adequate source of water that can be made potable (43:29).

Base Denial. Destruction of base facilities to prohibit the base from being used by enemy forces.

Base Recovery. Engineering tasks necessary to restore facilities so that a base can perform its mission after attack.

Base Recovery and Operations Team (BROT). Theater forces which perform emergency war damage repair (WDR) to utility systems and facilities other than runway and airfield pavements (43:29).

Collocated Operating Base (COB). A base hosted by an ally can be used to beddown USAF augmenting forces. COBs require civil engineering support to accommodate reception, beddown, launch/recovery of USAF aircraft. A COB may be a main, standby, or limited base (43:29).

Contingency. An uncertain future event sufficiently within the realm of possibility to warrant advance planning. Includes

potential military operations, civilian or military emergencies, natural disaster relief (43:29).

CONUS Prime BEEF Forces. Mobile civil engineering teams based in the Continental United States.

CONUS Sustaining Forces (CSF). Personnel who maintain and operate essential CONUS facilities in support of CONUS wartime operations. The CONUS sustaining role in base civil engineering is primarily handled by civilians. Strategic withhold forces are part of the CONUS sustaining force (43:29).

Deploy. To relocate a unit, or an element of it, to an area of operations or to a staging area. Deployment begins when the first aircraft, personnel, or items of equipment leave the home base. The force is deployed after the last component of the unit has departed (43:29).

Employ. To perform an assigned mission at the deployment location.

Force Beddown. Engineering tasks required to provide facilities necessary to support the mission of incoming personnel.

Generation Forces. Civil Engineering Forces which generate in-place for employment from their normal peacetime location or whose mission is performed in-place (43:29).

Harvest Bare. Nickname given to a bare base system. Harvest Bare is a concept in mobility which offers deployment of all supporting buildings to a bare or fixed base. These buildings are of light, modular design and may serve as containers for those items used in the buildings when set up. Harvest Bare consists of shelters, utilities, and base maintenance equipment and support subsystems. Harvest Bare assets are designed to support 4500 personnel in various increments and are designated as War Reserve Materials (WRM) and maintained in a ready-to-deploy status (43:29).

Harvest Eagle. Nickname given to a selected package of essential items of equipment and supplies required to support forces/personnel under bare base conditions. It is an air transportable housekeeping package designed to support activities deployed to remote areas where it is not feasible to preposition assets. Harvest Eagle sets are designed to support 1100 personnel and are designated as War Reserve Materials (WRM) and maintained in a ready-to-deploy status (43:29).

Limited Base (LB). A base that is austere manned and normally has no permanently assigned operational tactical forces, but may possess a small force for special operations (weather surveillance, alert aircraft, special purpose aircraft, etc.). With personnel augmentation, this base is capable of receiving deployed forces. It may have facilities for communications, air traffic control,

navigational aids, maintenance, base supply, munitions, weather, medical services, billeting, messing, transportation, and operational support. It may or may not be supported in peacetime as a satellite of a Main Base. War Reserve Materiel, including POL, may be maintained in a state of readiness for use by the deploying force to initiate and sustain operations; additional support personnel and equipment must be provided (43:30).

Main Base. A base, already constructed, containing all facilities and personnel necessary to support a flying mission. The base may require additional facilities and personnel to support additional flying missions.

Mobilization.

- a. The alerting of personnel and marshalling of equipment for a possible deployment/employment.
- b. The act of preparing for war or other emergencies through assembling and organizing national resources.
- c. The process by which the armed forces or part of them are brought to a state of readiness for war or other national emergency. This includes assembling and organizing personnel, supplies, and material for active military service (43:30).

Posturing. The process of matching existing capability, within Unit Manning Document (UMD) authorizations, with Prime BEEF team positions to fulfill identified wartime requirements (43:30).

Rapid Runway Repair (RRR). A runway repair procedure using interlocking aluminum matting to cover craters in bomb damaged runways.

Standby Base (SB). An austere base designated for wartime use having adequate airfield facilities to accept deployed aircraft. SBs will be maintained in a caretaker status until fully augmented, at which time they will be capable of receiving and employing assigned aircraft. To initiate and sustain operations, all supporting personnel, supplies, and equipment must be provided. POL and munitions may be prepositioned in a state of readiness for use by the deploying forces (43:31).

Strategic Withhold (SW) Forces. Those nonmobile military Prime BEEF forces required to perform direct combat support roles in the CONUS in support of strategic offensive and defensive missions (43:31).

Supporting Forces. Forces stationed in, or to be deployed to, an area of operations to provide support for the execution of an operations plan (43:31).

Prime BEEF Team Leaders. Officers and squad leaders of contingency force (CF) teams.

Theater Prime BEEF Forces. Overseas, in-place civil engineering forces. These Prime BEEF teams perform the same tasks as CONUS

Prime BEEF teams; however, most of these teams are nonmobile. These teams are organized into Base Recovery and Operations Teams (BROT), theater rapid runway repair (RRR) teams, theater mobile teams, and crash rescue and fire suppression teams.

War Damage Repair. Refers to the repair of all facilities except airfield pavements (43:31).

Prime BEEF Program Evolution

The following review of the Prime BEEF program evolution is quoted from the 10 August 1979 version of AFR 93-3, Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program:

In the early 1960's, the Air Force recognized a need for an engineering capability to respond to contingencies. In December 1963, a Civil Engineering and Manpower Organization Study Group was formed to distribute, align, and determine the skills and the manpower needed by civil engineering to support the Air Force mission. The study led to establishing the Prime BEEF program in which military engineers are used in peacetime for real property maintenance and are also prepared to support wartime contingency requirements.

The program postured two types of teams: mobile and nonmobile. Mobile teams (Contingency and Flyaway) were designed to support worldwide contingencies, special air warfare operations, and disasters. The nonmobile teams were Recovery (R) and Missile (M) teams. The 'R' team provided a military capability to operate bases during enemy attack, sabotage, natural disasters, major accidents, and civil disturbances. The 'M' team provided support of strategic missile operations.

Three changes to the Prime BEEF program resulted from the JCCRS: composition of the mobile teams was changed; the number of mobile teams was increased to meet the workload; and the primary responsibility for operation, maintenance, and recovery of continental United States (CONUS) bases during wartime became the responsibility of the civilian work force, augmented by contractors. Military civil engineers are now retained in the CONUS during a contingency only when required for direct combat support (Strategic Withhold). All other military personnel are designated as deployable resources, placed on the various mobile teams by skills and trained for deployment. [42:1-2]

Purpose of Prime BEEF

Air Force Regulation 93-3, Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program provides this definition of the purpose of the Prime BEEF program:

The Prime BEEF (Base Engineer Emergency Force) program is an Air Force, major command, and base level program that organizes the civil engineering force for worldwide direct and indirect combat support roles. It identifies and postures both civilian and military authorizations and skills for the dual role of performing peacetime real property maintenance and wartime engineering requirements. The Prime BEEF program includes all military civil engineering personnel at all levels of command. [43:5]

Prime BEEF teams respond to wartime and peacetime contingency engineering needs. During wartime, the primary Prime BEEF missions are runway repair and war damage repair (43:11). Additionally, these teams provide base operations and maintenance support as well as crash rescue and fire suppression at their deployment location. During peacetime, Prime BEEF teams can be used in natural disaster recovery operations, in facility construction or repair projects, and in military training exercises (43:5).

CONUS Prime BEEF Team Structure and Individual Team Missions

Currently, there are six types of CONUS Prime BEEF teams. All are called Contingency Force (CF) teams, and each is designated by number. The CF-1 team is a 21-member team composed of pavements specialists, equipment operators, and a civil engineering officer. This team's primary mission is rapid runway repair after an enemy attack. The CF-2 team is a 70-member team composed of civil engineering

mechanical, electrical, and structural specialists, along with work control, site development, supply, entomology, and administrative personnel. This team, with four civil engineering officers, supplements the CF-1 team to perform rapid runway repair; additionally, it performs war damage repair (WDR), force beddown, and maintains base facilities. The CF-3 team is a 35-member team containing many of the same civil engineering specialties as the CF-2 team. This team usually supplements the CF-2 team, and performs the same tasks. The CF-4 team, composed of fifteen officers and five senior NCOs, is designed for civil engineering staff augmentation. The CF-5 team, composed of 12 fire protection personnel, provides crash rescue and fire protection at the deployment location. The CF-6 team, composed of three senior fire protection NCO's, provides command and control for the CF-5 team.

Prime BEEF Deployment Conditions and Tasks

Types of Deployments

AFR 93-3 lists five types of Prime BEEF team deployments (43:13-14):

1. Preplanned joint contingency operations.
2. Unforeseen crisis actions.
3. Intracommand peacetime deployments.
4. Intercommand peacetime deployments.
5. Air Reserve and National Guard force deployments.

To meet their deployment objectives, teams may be deployed individually to meet a specific requirement such as assisting in a flood

control operation, or they may be deployed in groups to preplanned destinations specified in war plans (43:8,13). Additionally, special Prime BEEF teams can be constructed from among teams at several CONUS bases to meet a specific contingency requiring those team members with special training, experience, or knowledge. All Prime BEEF teams are deployable worldwide on a 28-hour notice (43:11). This includes 24 hours to prepare for deployment and 4 hours to deploy after the deployment order is received (43:11).

Wartime Deployment and Tasks

In wartime, CONUS Prime BEEF teams deploy as directed by the Air Force Civil Engineering and Services Center (AFESC) or as directed by their base mobility plans (43:13). Once deployed, Prime BEEF teams become an asset of the gaining Major Command (MAJCOM), and can be redeployed by that command. Therefore, these teams may not deploy to a predetermined location. Conus Prime BEEF teams can augment in-place civil engineering theater forces at main bases and collocated operating bases, or form the entire civil engineering function at limited, standby, and bare bases (43:11). Although all CONUS Prime BEEF teams are tasked for wartime deployment to specific receiving locations under operation plans (OPLANS), they can be redeployed on arrival or initially deployed under AFESC authority to any worldwide location. AFR 93-3 lists the following tasks as typical for Prime BEEF teams deployed under contingency or wartime conditions:

- a. Rapid runway repair (RRR).
- b. Base repair and operations.
- c. Force Beddown.

- d. Developing and preparing sites.
- e. Installing and operating mobile air base equipment, including portable shelters and utility systems.
- f. Relocating, operating, maintaining, and repairing facilities, utilities, aircraft arresting systems, and other base support systems.
- g. Providing fire protection and crash rescue.
- h. Providing insect control, sanitation, and other civil engineering services.
- i. Acquiring and disposing of real estate.
- j. Augmenting or supporting command staff civil engineering.
- k. Emergency war damage repair management.
- l. Explosive ordnance reconnaissance.
- m. Base Denial.
- n. War damage repair (WDR).

[43:14]

CHAPTER III

METHODOLOGY

Chapter Overview

This chapter describes the methodology used to accomplish the research objectives restated below. It describes how the engineering topics in this study were selected, and includes a description of research steps. An outline of the format used to organize the information is followed by instructions for using the manual and an overview of the remaining chapters.

Research Steps for Objective #1

The first major step, parallel to the first objective, was to identify the categories of site-specific information required by Prime BEEF teams to operate efficiently when deployed. A list of categories was developed by consulting military civil engineering officers well versed in the field of Prime BEEF contingency operations (1; 39).

Categories identified as important are the following:

Airfield Information

- Runway length and width
- Runway thickness and pavement type
- Altitude
- Airfield layout

Facilities Information

- Hangar locations
- Hardened facilities
- Number of buildings
- Size of buildings

- Use for each building

Logistical Support

- Type of heavy equipment available
- Spare parts availability
- Fuel availability and fuel storage
- Construction materials locally available

Utilities Layout

- Overhead power distribution
- Storm sewer
- Sanitary sewer
- Backup power facilities
- Sewage treatment process
- Water treatment process
- Water distribution system
- Type of electrical power

Climate, Geography, Flora and Fauna

- Temperature
- Humidity
- Thunderstorms
- Rainfall
- Snowfall
- Hills, mountains, plains
- Local vegetation
- Animals
- Insects

Mission Information

- Current mission
- Current airfield users
- Incoming mission (aircraft type)
- Number of people incoming

Host Country Information Affecting Workforce

- Health conditions
- Culture and customs
- Locally available logistical support

Threat Information/Intelligence

- Expected time of attack
- Expected intensity of attack

Research Steps for Objective #2

In order to fulfill the second objective--to collect information about these topics for specific, possible Prime BEEF deployment sites in the Middle East--four steps were required:

1. First, the sites had to be selected. Since Prime BEEF teams support a flying mission, deployment will likely be to a location with an existing airfield. Locations with airfields longer than 4,000 feet for all countries in the world can be obtained from Defense Mapping Agency air navigation charts. An airfield length of 4,000 feet is the minimum for tactical flight operations. These locations with airfields longer than 4,000 feet constitute specific, possible Prime BEEF deployment sites.

2. Second, the regional area of coverage for this study had to be selected. The area selected included Egypt and the eight countries of the Arabian Peninsula. These countries contain approximately 240 airfields over 4,000 feet long, are geographically contiguous with distinct borders, and are fairly homogeneous according to climatic and cultural criteria. Additionally, civil engineering officers experienced in Prime BEEF mobility indicated deployment to the countries in this region was possible (1; 39).

3. Next, a decision had to be made about the geographic breadth of information to be collected in each category for these sites. The pro-

cess used to answer this question was to begin with the specific potential deployment sites and enlarge the area to the largest geographic unit that could contribute information about the specific sites. Through this process, three levels of information were identified as important: information common to the entire region of Egypt and the Arabian peninsula; information specific to each country in this region; and information specific to each potential deployment site (airfield) in each country.

4. Finally, information was collected for each category in all of these levels, subject to availability and classification of information.

Research Steps for Objective #3

The third objective--to design a concise field manual format to transmit information for rapid use under deployment conditions--was accomplished by applying the following five criteria to the three levels of information described in research steps for objective 2:

1. Ease of use. Prime BEEF team leaders will need the information quickly, and should not be confused by the format.
2. Conciseness. The bulk of the document might affect its usefulness in a contingency.
3. Preciseness. Accuracy of information available to deployed teams can directly affect how the mission is accomplished.
4. Completeness. Stripped of its purely academic sections, the report should be a self-contained manual.
5. Adaptability. The format should lend itself to other studies so any fairly homogeneous geographic area overseas could be the subject of

a similar report.

To meet these criteria, a format was developed to enable the user to quickly access all information relevant to the specific deployment site with a minimum repetition. This format, reflecting the three geographic levels of information, (entire region, national, site specific), begins with general information applying to the entire geographic region, followed by information applicable within political boundaries, followed by information applicable only to specific deployment sites. The precise format is explained in detail later in this chapter.

Research Steps for Objective #4

The last research objective--to illustrate the format by compiling the deployment manual for all sites within the region--involved research to determine information sources. Unclassified information sources included military regulations and manuals, U.S. Department of State publications, Defense Mapping Agency publications or maps, books and travel guides written by private authors, and personal interviews. The amount of information available in unclassified sources varied widely from country to country. Much more information is available concerning Egypt and Saudi Arabia than the perimeter countries of the Arabian peninsula. For example, a large part of Oman is not included on any plates in the 1981 Rand McNally New International Atlas. All information relating to the categories of site-specific information identified under research objective 1 was included when available.

Description of Topics and Organization

Regional Information

Chapter IV contains information about the entire geographic region of Egypt and the Arabian Peninsula. Topics covered are Islamic religion, social customs, regional health topics, and engineering considerations in the desert.

It is important to understand Islamic religion and social customs, because this understanding will affect Prime BEEF team member interaction with local Arabs. Willingness of Arabs to help a Prime BEEF deployment may be enhanced by the teams' knowledge of (and respect for) regional religious and social customs. Therefore, the first part of Chapter IV provides background information on these topics.

Knowledge of health factors affecting the engineering workforce is important to help team leaders devise preventive measures prior to deployment. For instance, anti-malarial tablets are available to prevent malaria when taken weekly. Schedules can be made to reduce adverse effects of acclimation, and clothing to reduce the sun's effects can be packed. The second part of Chapter IV includes information about these topics, as well as other diseases, water conservation, personal hygiene, work rules, desert pests, and salt intake.

Engineering considerations in a desert environment include equipment operation and maintenance, power production, building materials, camp siting, fire fighting protective measures, and local labor. Information in the last part of Chapter IV allows some pre-planning in

these categories before deployment, as well as guidelines once the team is on site.

Deployment Location Specific Information

Chapters V through XIII provide more specific information about topics unique within political boundaries of the nine countries. The format for each of these chapters is identical, although all information categories are not available for some of the countries. Egypt is discussed first in Chapter V, then Saudi Arabia in chapter VI. The remaining countries proceed in order starting with the Yemen Arab Republic and moving east, then north around the perimeter of the Arabian peninsula to the Yemen Democratic Republic, Oman, Qatar, Bahrain, the United Arab Emirates, and Kuwait.

Each of these national chapters begins with demographic and geographic background information, including a brief description to terrain, roads, population, sanitation, and disease. These topics supplement the information in Chapter IV.

Variations of regional religion and culture unique to the country are discussed next. This section is limited to exceptions or additions to information about these same topics outlined in chapter IV.

The third section in each national chapter is climate. High and low average temperatures, precipitation, thunderstorms, and wind are covered. Knowledge of climate affects shelter construction, equipment operation, siting, work schedules, maintenance intervals, and other engineering operations.

The fourth section in each of these chapters is a list called Briefing Notes. This list includes information about prohibited items, electric supply, weights and measures, fixed holidays, local time, military rank and insignia, and other information unique to the country. Part of this information will be useful to prepare for deployment and the rest should help communication with nationals after the teams are deployed.

The last sections in Chapters V through XIII contain airfield-specific information for each country. This information is organized into brief airfield summaries which contain the following data: airfield coordinates, primary users (if known), pavement type (if known), number of runways, length of the longest runway, airfield elevation, local relief, local vegetation, and whether there is a large city nearby. Airfield coordinates allow the user to locate an airfield if the airfield name is unknown. Information about users (civilian or military) and nearby large cities may indicate availability of host nation logistical support. The number of runways, pavement types, and runway lengths all affect contingency airfield layout and repair. Airfield elevation affects aircraft performance, and is also a factor in planning the length of repaired runways. Local relief and vegetation are considerations in camp siting, due to natural protection provided by hills and vegetation.

In these sections of Chapters V through XIII, each airfield can be located if the user knows either the airfield name or approximate airfield location. The user is provided a complete alphabetical list of

airfields in the country, keyed to maps which show location. Conversely, numerically keyed maps allow the user to locate airfield names.

Appendices to the Manual

Two appendices follow the national chapters of deployment information. Appendix A contains imperial/metric weights and measures conversions. Appendix B contains aircraft performance information for the A-10, F-4, F-15, and F-16. Information on these aircraft is included because they will probably be used where Prime BEEF teams deploy.

Index of the Manual

The manual portion of this study ends with an index. The index is provided to help the user quickly find information about a particular subject.

Chapter XIV, Conclusions and Recommendations, and the thesis bibliography follow the manual's appendices and index. This format allows the user to easily remove these sections, because the information they contain is unnecessary for field use of the manual.

Example for Using This Document

In summary, all users of this manual should read Chapter IV (regional information). Then they should turn to one of the Chapters V through XIII for information on their specific country of deployment. Finally, they should locate within that chapter the site-specific infor-

mation they will need when deployed.

The following example illustrates this process by assuming deployment notification has been received directing Prime BEEF team deployment to Cairo West, Egypt.

After reading Chapter IV for information about religion, customs, health, and engineering problems that occur throughout Egypt and the Arabian Peninsula, team leaders would turn to Chapter V (Egypt). Within this chapter, the users should locate their airfield's approximate location by using the maps and the lists of airfield names (provided in each chapter). Since Egypt is a very large country containing different natural features, knowledge of the approximate location of the deployment site will help the reader extract essential information from the narrative part of Chapter V. With this approximate location in mind, users should read the narrative part of Chapter V, which contains specific information about Egypt. After reading this narrative, the user would locate Cairo West in the detailed zoned airfield lists provided in Chapter V (and in other chapters) and read the specific site information contained in airfield summaries at the end of the chapter.

As stated in Chapter I, this study assumes Prime BEEF teams will deploy to an area with an existing airfield. If not, the information in the airfield summaries may still be useful if an approximate deployment destination is known. Summaries of airfields near the deployment destination may give at least some general site information that may be useful for planning purposes.

CHAPTER IV

REGIONAL INFORMATION

Chapter Overview

This chapter contains general information about Egypt and the Arabian peninsula. In order of presentation, it contains the following information: 1) user instructions, 2) facts about Islamic religion and culture needed by engineers working with Arabs; 3) regional health information including diseases and preventive measures; and 4) engineering considerations in a desert operation.

Instructions

READ THIS ENTIRE CHAPTER. The information in it applies to almost all parts of Egypt and the Arabian Peninsula and contains information that will not be repeated in later sections. This regional information will be followed by more specific information in the following chapters.

Religious Customs

Background

The Islamic religion is based on the teachings of Mohammed (mo-HA-med) beginning in 624 A.D. (14:30). The holy book of Islam is the Koran (ko-RAN). It consists of revelations Mohammed claimed to receive from Allah (ALL-uh) (14:32). Moslems see Mohammed as only a messenger,

not a miracle in himself. The real miracle is the Koran, since it contains the words of Allah (14:32).

The Koran (the word of Allah given to Mohammed), combined with the Sunna (SON-a) (sayings of Mohammed), form the basis of Islamic law (19:17). Thus, law and religion are impossible to separate. This sacred law, rooted in divine revelation, is called the Shari'a (shah-REE-a) (19:17). There are four differing schools of Islamic law, two of which occur in the region covered by this report. The first school, Hanbali (han-BALL-e) is the strictest of the four by American standards and is common in Saudi Arabia (6:30). Shafiis (shaf-E-ees), a more moderate school, is prevalent in Egypt and the southern Arabian peninsula (6:30). Islamic law is divided into five areas or topics. These are: 1) acts commanded, 2) acts recommended, 3) acts reprobated, 4) acts forbidden, and 5) acts left legally indifferent (19:17).

The Koran prescribes five religious duties for Arabs. The first is profession of faith, the "shahada" (shu-HU-duh) (22:12). The shahada states: "There is no Allah but Allah; Mohammed is the Messenger of Allah" (22:12). The second duty is prayer five times a day: dawn, mid-day, mid-afternoon, sunset, and nightfall (22:12). Every day at these times, all believers will stop work and pray (22:12). The third duty is almsgiving (charity). The fourth duty is fasting. Every healthy Muslim must fast from sunrise to sunset during the holy month of Ramadan (RAH-maw-dahn) (22:13). The final duty is pilgrimage to Mecca (MEK-ah), the Arab holy city. Every Muslim who is fit enough and can afford the trip must make this journey once in his lifetime (22:13).

Religious Diet Restrictions

Alcohol. Alcohol is an extremely sensitive topic in Islamic countries. Moslems see alcohol as damaging to health and emotional control, so it is prohibited under Islamic law (45:13). The severity of alcohol restrictions varies among countries. The subject will be discussed again in the chapters concerning individual countries.

Pork. Eating pork is prohibited under Islamic law (45:14).

Religious Fast

Ramadan. Ramadan is a month of daytime fasting (45:13). It follows the Muslim calendar, which is shorter than the Western (Julian) calendar by 10 to 12 days per year (45:13). In some places, visitors may be expected to observe the fasting custom of Ramadan, but foreigners are generally allowed to eat privately, out of the sight of fasting Muslims (45:13). Ramadan ends with a two to four day festival called Eid-el-Fitr (ide-el-FIT) (45:13). The following are approximate Julian dates of Ramadan from 1984 through 1988 (2:5):

1984: start 1 Jun, end 1 Jul

1985: start 19 May, end 18 Jun

1986: start 8 May, end 7 Jun

1987: start 27 Apr, end 27 May

1988: start 16 Apr, end 16 May

Religious Courtesies.

DO NOT --walk in front of a praying Moslem (20:11).
--walk across a prayer rug (20:11).

- take pictures (20:11).
- talk loudly (20:11).
- move quickly around praying Moslems (20:11).

In summary, DO show respect for prayer.

Business and Social Customs

Background

Dealing with nationals requires some knowledge of the historical and social backgrounds of the region. Information about three topics--nomadism, Arab pride (and shame), and sex roles--is particularly useful.

1. Nomadism. One to two percent of the population in Arab countries is nomadic (6:12). This is about 500,000 people in Saudi Arabia, 400,000 around the perimeter of the Arabian peninsula, and about 50,000 people in Egypt (6:12).

2. Pride and Shame. Arab men fear shame (14:93). Social or business contacts with Americans who do not understand this can result in shame and embarrassment for Arabs. For example, inability to answer a question is shameful to an Arab (14:93). Failures like this are customarily hidden or blamed on someone else (14:93). John Laffin, in his book The Arab Mind: A Need for Understanding states:

With his sensitivity to pride and shame it is not surprising the Arab is easily offended. Western visitors would be astonished to know how frequently they unintentionally hurt Arabs with whom they have social or business connections. (14:95)

3. Sex Roles. The Koran holds women as inferior (14:98). In the stricter Arab countries, sex can be an obsession among Arab men, who see western women as immoral (14:102). The informal male/female relationships between Americans can be frustrating to Arab men (14:104). An

Arab man alone with an American woman may make sexual advances to her (14:102). To avoid potential problems, American women should dress soberly when among the Arab population (45:14). American men should not initiate social contact with Arab women (i.e., shake hands or start a conversation) because this may imply to other Arabs that the woman is not virtuous (13).

4. Female Prime BEEF officers. Female officers in team leadership positions must be very careful of their dress and behavior in front of Arab men. Women leaders in western cultures are respected by Arab men if their behavior is what Arabs consider "respectable" (13):

- DO -attempt, by dress and manner, to create a serious impression.
- wear loose fitting fatigues.
- consciously think about eye movements: maintain eye contact with the Arab man you are talking to.

DO NOT --look at any body parts of an Arab man (i.e., legs, torso, arms). Arab men take such glances as sexual invitations, and will quickly lose respect.

Business Courtesies

With these religious and social customs in mind, team members should observe the following rules in all business interaction with nationals:

1. Abruptness. DO NOT end a meeting or conversation abruptly (19:50).

2. Coffee. DO -accept coffee if offered (19:80).
-drink at least two cups (45:14).

If more is offered, just shake your cup slightly, alerting your host you have had enough (45:14).

3. Confrontation. DO NOT contradict nor publicly confront an Arab with a negative subject (19:50).

4. Criticism. DO NOT criticize an Arab in public (19:50).

5. Foot Sole. DO NOT make the sole of your foot visible to an Arab (45:14).

6. Right Hand. DO offer and receive everything with your right hand. Arabs consider the left hand unclean (45:14).

7. Small Talk. DO generously compliment and admire non-personal things such as architecture, gardens, culture, and advanced technology (19:50).

Regional Health Factors Affecting the Engineering Workforce

Acclimation

Three primary contributors to the need for acclimation are altitude, heat, and jet lag (45:18-19).

Altitude. The symptoms of altitude sickness are dizziness, headaches, nausea, flatulence, and vomiting (45:18).

DO -avoid alcohol and greasy food (45:18).
-reduce smoking (45:18).

Heat. To reduce the effects of heat (45:18):

DO -wear a hat.
-avoid man-made fibres (wear cotton).
-drink plenty of liquids.
-encourage perspiration by wearing clothes that absorb sweat.

Jet Lag. Jet lag, a significant problem on west-to-east flights, results in tired and apathetic personnel (45:19). A 48-hour rest period for a 10-hour time change is recommended (45:19). Deployments to southwest Asia involve a time change of seven to twelve hours, depending on CONUS departure location and deployment destination (23:313).

Suggested acclimation schedules are outlined in Table 4.1:

TABLE 4.1
Acclimation Work Schedule in a Desert Environment

Schedules of Work, If Necessary, During Acclimatizing Period				
	Moderate Conditions, WBGT or WD Less Than 80° F (27° C)*		Severe Conditions, WBGT or WD Greater Than 80° F (27° C)	
	Hours of Work** Morning	Afternoon	Hours of Work** Morning	Afternoon
First day	1	1	1	1
Second day	1-1/2	1-1/2	1-1/2	1-1/2
Third day	2	2	2	2
Fourth day	3	3	2-1/2	2-1/2
Fifth day	Regular Duty		3	3
Sixth day	Regular Duty		Regular Duty	

*80° wet-bulb-globe-temperature (WBGT), or WD index, is approximately equivalent to a dry bulb (DB) temperature of 85° F (29° C) in a jungle or 105° F (41° C) in a desert environment ($WD = 0.85 WB + 0.15 DB$).

**Recommended for men in fair or worse physical condition; with some care, very fit individuals should do double this schedule and be able to perform regular duty on third or fourth day.

(Adapted from 40:9-4)

Clothing

Clothing must provide protection from the sun's brightness and sunburn effects. Protective equipment should include widebrim hats, sunglasses, gloves to protect hands from hot tools, goggles, and lip, skin and eye ointments (40:9-2).

Initially, if the body is not covered completely by clothing, government issue sunblock cream should be used (47). Later, after suntans develop, one idea for a uniform is cutoff shorts (if insects are not a problem), jungle boots with green cotton/wool socks, and the green olive drab T-shirt (white T-shirts reflect the sun and are hard on the eyes) (47).

Diseases and Illnesses

Eye Disease. In some areas of the region, eye diseases produce blindness in 20 percent of the population (6:19). Prime BEEF personnel should consult medical personnel for protective measures if this is a problem near the deployment site.

Hepatitis. Hepatitis is the destruction of liver cells caused by a virus entering the body through the digestive system or the circulatory system (e.g., blood transfusions or contaminated injection needles) (4:112). The most common form of hepatitis in the Middle East is viral hepatitis, caused by eating food or water contaminated by feces of infected persons (4:112). Mild hepatitis symptoms include fever, muscle aches, headache, and appetite loss. More severe cases involve jaundice, nausea, fatigue, and a swollen, tender liver (4:112).

- D0 -treat with bed rest and a high protein diet (45:17).
- eat only carefully washed and well-prepared food (45:17).
- emphasize personal hygiene (45:17).
- drink only water known to be pure (45:17).

An injection of human immuno-globulin gives partial protection lasting four to six months (45:17).

Intestinal Upsets. Intestinal upsets are usually caused by a diet change or water borne microorganisms. To reduce the severity of resulting diarrhea:

DO -boil drinking water (45:17).

DO NOT --buy food from natives (45:17).
--eat uncooked food (45:17).

Severe diarrhea with severe stomach pains could be dysentery. Seek medical advice for these symptoms (45:17).

Malaria. Although malaria is generally eradicated from the region, it is still a problem in the southern Arabian peninsula, where a resistant strain of mosquitos has developed (6:19). Only the anopheline mosquito carries malaria. This mosquito normally bites after dark (6:16). Symptoms of malaria include fever, spleen enlargement, and anaemia caused by destruction of red blood cells (6:17).

DO -wear long sleeves and trousers (6:16).
-use insect repellent on exposed skin (6:16).
-use insect sprays and mosquito netting (6:16).
-take anti-malarial tablets, and continue dosage for 28 days after leaving area.

Table 4.2 shows anti-malarial drugs, times between doses, and common manufactured names:

TABLE 4.2

Anti-Malarial Drugs, Time Between Doses,
and Common Manufactured Names

Drug	Time Between Doses	Common Manufactured Name
Proguanil	Daily	Paludrine, Chlorguanide
Pyrimethamine	Weekly	Daraprim
Chloroquine	Weekly	Aralen, Aulacor Nivaquine, Resochin
Amodiaquine*	Weekly	Camoquin, Flavoquine
*Avoid amodiaquine during pregnancy.		(45:16)

D0 -continue to take anti-malarial tablets for 28 days after leaving a malaria area, because malaria incubates 10-14 days in the bloodstream (45:17).

Parasitic Infections. Irrigation has increased the incidence of parasitic infections (6:19). These infections result in mild to severe dysentery, with newcomers especially susceptible (6:19).

Typhoid and Cholera. Typhoid is prevalent in some areas, as are periodic outbreaks of cholera (6:19). These diseases should pose no threat to properly immunized Prime BEEF team members.

Personal Hygiene and Sanitation

Personal Hygiene. Constant attention to personal hygiene is required due to hot and dusty living conditions (40:5-13). Water is

important for personal hygiene, and a minimum of 2.7 gallons of potable water is required each day for every person (40:5-13). This water is used for (40:5-13):

- 1) Daily shaving: 1-1/2 quarts (helmet capacity).
- 2) Helmet baths on alternate days (4 helmets each).
- 3) Comfort cooling: 1/2 quart poured over the head 8 times per day.
- 4) Teeth brushing and hand washing (2-1/4 quarts).

Washing and shaving with limited water supplies will take extra time.

- DO
- wash as much of the body as possible every day (47).
 - keep hair very short because it is easier to keep clean (47).
 - use gelled shaving cream because it stays moist longer (47).
 - use baby powder to relieve "prickly heat" (47).

DO NOT --use deoderant, hair spray, or cologne because they attract flies (40:9-3).

Sanitation. Strict standards of sanitation must be observed when eating. For C-rations, this procedure can be followed (47):

- DO
- put all waste from individual meal boxes back inside the box.
 - put the individual boxes (which now contain the waste) back in the case.
 - bury the case.
 - remember that opened food spoils quickly in desert heat.

This procedure helps account for all the garbage, and reduces the chance of someone leaving garbage in the camp to attract insects or rodents.

DO NOT --allow anyone to eat inside his or her living area, because spilled food will attract flies (47).

Pests

Common desert pests include ants, fleas, flies, lice, locusts, rats, and scorpions (40:5-54). Locusts may be a severe problem near cultivated areas (6:19). They breed in the desert, then swarm to cultivated land (6:19). Burning the leaves of native Kafour trees repels insects in open, outside areas (13).

Salt Intake

- DO -use a little extra salt on food (40:9-1), but
- DO NOT --take extra salt if water supplies are restricted (40:9-1).

Water

Water is classified as potable and nonpotable. Potable water is water that has been examined by responsible authorities and declared fit for human consumption (40:5-4). All other water should be regarded as unfit for human consumption (nonpotable).

Due to lack of water in the desert, water conservation and ensuring sufficient water intake are primary concerns.

- DO -train personnel to change their water consumption habits (40:5-2).
- train personnel to drink water frequently during the day. Four gallons of water per day are required under hot desert conditions while doing strenuous work. This much water is difficult to drink when only warm water is available (40:5-9).
- instruct personnel about water reuse and different uses for potable vs. nonpotable water (40:5-2).
- use command emphasis to reduce water consumption (40:5-2).
- protect potable water from contaminants (40:5-7).

DO NOT --dispose of water without considering alternative uses (40:5-7).
 --use potable water for laundry or showers. These activities do not require potable water (40:5-14;5-20).

Changes in potable water sources can cause "chemical diarrhea" due to time needed by the body to adjust to a water source (40:9-3).
 Table 4.3 outlines water requirements for light, moderate, and heavy activity (40:9-4).

TABLE 4.3

Human Water Requirements in a Desert Environment

Quarts per Man per Day
 for Drinking Purposes
 (A Guide for Planning
 Only) WBGT or WD Index*

Activity	Illustrative Duties	Under 80° F (27° C)	Over 80° F (27° C)
Light	Desk work	5	6
Moderate	Route march**	7	9
Heavy	Forced marches***; stevedoring; entrench- ing; or route marches with heavy loads or in chemical protective clothing.	9	13

*80° wet-bulb-globe-temperature (WBGT) or WD index is approximately equivalent to a dry bulb temperature of 85° F (29° C) in a jungle or 105° F (41° C) in a desert environment ($WD = 0.85 WB + 0.15 DB$).

**A route march is walking with packs at three miles per hour.

***A forced march is walking with packs at five miles per hour.

(Adapted from 40:9-4)

Work Rules

There are several techniques to reduce the effects of sun and heat on work groups.

- DO -work in early morning, evening, or night (40:9-1).
- rest during the hottest part of the day (40:9-1).
- work in the shade if possible (40:9-1).
- dress as the natives do: wear loose clothing, and cover the head (40:9-1).
- store tools in a shaded area or they will be too hot to handle with bare hands (40:9-2).

DO NOT --work in direct sunlight without hats or sunglasses (40:9-2).

Engineering Considerations in a Desert Environment

Building Materials

Generally, there are very few materials suitable for construction in the region (40:10-17). Indigenous building materials include stone, clay soils, and some wood (40:10-17).

Two methods of earth construction include adobe and rammed earth (40:10-2). To construct adobe bricks, place wet mud in forms. Remove the forms when dry, then cure the bricks for one month. The bricks can be held together with mortar made from the same material. This method is easy, but takes much time (40:10-2). Rammed earth construction consists of moist soil rammed into heavy forms (40:10-2). The forms are continually moved after a section is complete (40:10-2). This method requires careful soil selection, and the forms require skill to construct.

Equipment Operation and Maintenance

Heat, dust, and sand are major problems for equipment operation in the desert (47). Dust and sand can clog fuel systems and air intake systems, and can ruin bearings (40:9-6). Extra care must be taken with fuel systems, cooling systems, and air-filtering systems. Lubrication, battery maintenance, tire pressure, and gasoline storage also require extra attention. Additionally, techniques of vehicle operation in the desert may differ from normal operation in the CONUS.

Air Filtering Systems.

- DO -be extra careful with air filters.
- inspect air filters at least daily (40:9-6).
- use compressed air to clean filters (40:9-7).
- devise redundant air filtering systems if possible (40:9-7).
- try to get a good supply of replacement filters (40:9-7).

DO NOT --bang air filters to clean them. This can puncture or deform them (40:9-7).

Battery Maintenance. Extreme heat reduces battery power and increases the frequency of failure (40:9-7). Preventive maintenance includes adjusting the specific gravity of battery acid from 1.200 to 1.225 (40:9-7). Sulfuric acid, federal stock number 904-9372, meets this specific gravity requirement (40:9-7).

- DO -carry distilled water on the vehicle to keep the battery full (40:9-7).
- keep the battery (especially the air vents) clean to prevent pressure buildup (40:9-7).
- set the voltage regulator as low as practical to keep the battery charged (40:9-7).

Cooling Systems. Several maintenance actions should be taken to reduce engine overheating:

- DO -check oil frequently (40:9-7).
- check oil seals and gaskets on engine to ensure no leakage (40:9-7).
- keep radiators clean (40:9-7).
- install coolant recovery systems (40:9-7).
- try to create a shaded vehicle storage area (47).
- let vehicles idle for five minutes before shutdown to dissipate engine heat (47).

DO NOT --remove hood side panels because this reduces airflow through the radiator (40:9-7).

Fuel Systems. Dust and sand can get in the fuel tank during refueling and clog the fuel pump, fuel lines, or tank screens (40:9-6). The following refueling techniques will reduce the amount of sand in the fuel tanks (40:9-6):

- DO -remove sand and dust around the fuel tank cap before taking it off.
- clean fuel filters more often than required under normal operating conditions.
- refuel in an area protected from the wind.

DO NOT --fill the tank to the rim--leave room for expansion.

Gasoline Storage. Over long storage periods, gum will form in gasoline. High temperatures speed up gum formation. Storage life for gasoline in Egypt and the Arabian peninsula is only three months in the hottest areas (40:9-9).

Lubrication. External lubrication attracts sand, and internal lubrication gets very hot.

- DO -keep lubrication to a minimum on exposed surfaces (40:9-6).
- use heavier weight engine oils designed for operation in high temperatures (40:9-6).
- change engine oil and oil filters frequently (40:9-6).

Tire Pressure. Experiment to find the best tire pressure (40:9-8). Factors to consider are traction and tire heat. Low tire pressure may provide better traction, but underinflation will cause tire overheating (40:9-8).

Vehicle Operations. Regional factors affecting vehicle operations are traction, heat, and sand (40:10-12). For traction, low pressure single tires are best because duals tend to break the surface and embed in the sand (40:10-12). Once a trail is broken, vehicles should remain in the same tracks when convoying through sandy areas (40:10-12).

High temperatures affect both equipment and operator. Time spent operating equipment should be contingent on operator comfort. For example, a single operator can work longer in an air conditioned cab. In the absence of air conditioning, supervisors should try to provide a shaded cab (40:10-12). Operators should follow maintenance tips previously discussed, and be aware of potential problems due to heat and sand.

Fire Fighting

Fire fighting tools include nonpotable water, chemical extinguishers, sand, buckets, and shovels (40:5-53).

- DO -plan carefully for fire prevention.
- locate 55 gallon drums full of water near important structures, equipment, or materials (40:5-53).
- provide dispensing buckets, sand buckets, and shovels near the drums (40:5-53).
- provide one 55 gallon drum per general purpose tent, and use more where fire hazard is greater (40:5-53).
- use only the lowest quality water (40:5-53).

Local Labor

Often, the local labor force has practical knowledge of construction problems non-natives are unfamiliar with (40:9-5). Three rules should be observed when dealing with local labor (40:9-5):

- DO -discuss native labor use with local authorities.
- negotiate only with native labor leaders.
- carefully observe local customs.

If the camp is near a populated area, DO provide security in storage areas to reduce pilfering (40:9-5).

Power Production

Distribution. The primary rule for the electrical distribution system is to keep it simple (40:4-1).

Desert soil may not produce a good ground (40:4-28). To produce a better ground, a bare wire grid system can be constructed under the generator, tied into a ground rod (40:4-28). The grid system should be covered with sandbags, and the generator placed on top of the sandbags in the middle of the grid. The soil around the grounding rod should be saturated with a salt water solution (3 lb/gal) and kept saturated if water permits (40:4-28).

Heat reduces the current carrying capacity of copper wire, so larger diameter wire may be necessary (40:4-11).

- DO -use gloves to lay cable, because human sweat on underground cables attracts rodents (40:4-7).

Generators.

- DO -shade and protect generators from the wind as much as possible (40:4-7).
 - use dry cleaning techniques like compressed air (40:4-7).
 - try to anticipate mechanical problems due to sand, heat, and dust (40:4-7).
 - use light colored paint on equipment housing to reduce overheating (40:4-11).
- DO NOT --apply grease or oil to exposed surfaces, because it attracts sand (40:4-11).

Siting

Wind protection, water availability, drainage, and vegetation are important factors for siting a camp in the desert (40:2-1,2-2).

- DO -look for a site with a water source nearby (40:2-1).
- consider drainage: when rain does occur, it can be severe (40:2-1).
- try to find a location protected from wind and blowing sand (40:2-1).
- design the site to minimize solar radiation, both direct and reflected. This can be done by considering the direction of shade cast by buildings and tents (40:2-2).
- locate the site in an area of vegetation if possible. Vegetation helps hold sand in place, and also reduces the amount of radiation that hits the ground (40:2-1).

In many areas, "desert pavement," a surface crust, is formed by years of rain and wind. This crust varies from one-half inch to four inches thick (40:1-3). Vehicles will break through this crust. Then, the wind causes blowing dust (40:1-3).

CHAPTER V

DEPLOYMENT LOCATION SPECIFIC INFORMATION: EGYPT

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Egypt. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Egypt. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, Egyptian rank and insignia, clothing, and cameras. The last part of the chapter contains airfield summaries of 65 Egyptian airfields large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that generally applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 5.1 and the alphabetical airfield listing in Table 5.1. Mark the approximate airfield location on the map in Figure 5.1. Keeping this location in mind, read the entire narrative description of Egypt, focusing on the information that applies more specifically to your deployment area.

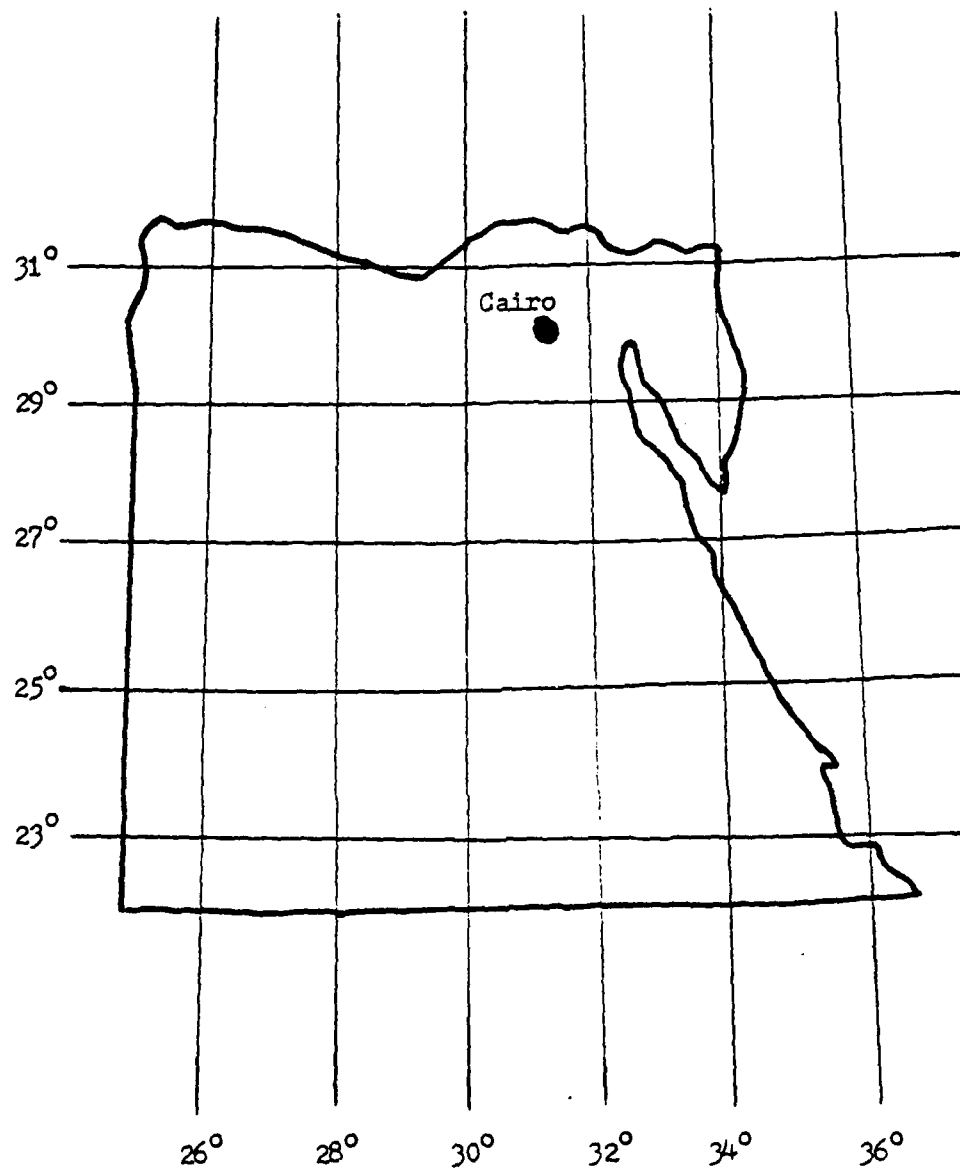


FIGURE 5.1
Map of EGYPT with Latitude and Longitude References

TABLE 5.1

Alphabetical List of EGYPTIAN Airfields and their Coordinates

Airfield Name	Geographic Coordinates
Abu Rudeis	28°54'N 33°12'E
Abu Rudeis New	28°41'N 33°21'E
Abu Simbel	22°22'N 31°37'E
Abu Suwayr	30°34'N 32°06'E
Al Ismailiyah	30°36'N 32°14'E
Al Mansurah	30°58'N 31°26'E
Al Manzilah	31°03'N 31°54'E
Al Rahmaniya	31°03'N 30°39'E
Alexandria	31°11'N 29°57'E
Aswan	23°58'N 32°48'E
Asyut	27°02'N 31°02'E
Az Zaqaziq	30°36'N 31°40'E
Baluza	30°59'N 32°33'E
Beni Suef	29°13'N 31°02'E
Bilbays	30°25'N 31°37'E
Bilbays 2	30°25'N 31°39'E
Bir Abu Raha1	25°00'N 33°31'E
Bir El Hamma	30°38'N 33°31'E
Bir Hasanah	30°11'N 33°22'E
Birma	30°50'N 30°56'E
Cairo Almaza	30°05'N 31°22'E
Cairo International	30°07'N 31°24'E
Cairo West	30°07'N 30°55'E
Dakhla Oasis New	25°27'N 29°01'E
Daraw	24°25'N 32°56'E
Deversoir	30°25'N 32°21'E
Dukhaylah	31°08'N 29°49'E
El Arish	31°05'N 33°50'E
El Minya	28°06'N 30°43'E
El Tor	28°13'N 33°38'E
Embaba	30°04'N 31°11'E
Faid	30°19'N 32°15'E
Gebel El Basur	30°32'N 30°35'E
Gebel Libni	30°48'N 33°47'E
Ghurd Abu Sannan	29°33'N 29°02'E
Habata	31°06'N 25°27'E
Hod El Bida	30°49'N 32°31'E
Hulwan	29°49'N 31°20'E
Hurghada	27°12'N 33°47'E
Inshas	30°20'N 31°28'E
Jiyanklis New	30°49'N 30°12'E
Kafr Daud	30°28'N 30°47'E

TABLE 5.1 (cont.)

Alphabetical List of EGYPTIAN Airfields and their Coordinates

Airfield Name	Geographic Coordinates
Kibrit	30°15'N 32°29'E
Kom Awshim	29°34'N 30°53'E
Luxor	25°04'N 32°42'E
Mersa Matruh	31°19'N 27°13'E
Minshat Sabri Highway Strip	30°31'N 31°07'E
Misfad	31°02'N 33°09'E
New Valley	25°29'N 30°36'E
Port Said (Bur Said)	31°17'N 32°14'E
Quwaysina	30°35'N 31°08'E
Ras Banas	23°58'N 35°28'E
Ras Gharib	28°17'N 33°07'E
Ras Shukhayr	28°07'N 33°17'E
Ras Sudr	29°36'N 32°41'E
Refidm (Bir Jifjafah)	30°25'N 33°08'E
Saiyah El Shirif	31°20'N 30°57'E
Sidi Barrani	31°28'N 25°51'E
Siwa Oasis North	29°21'N 25°33'E
St. Catherine	28°41'N 34°04'E
Uthman	29°34'N 25°34'E
Wadi Abu Rish	28°58'N 31°41'E
Wadi Abu Shihat	26°35'N 33°08'E
Wadi Al Jandali	30°03'N 31°50'E

Demographic and Geographic Background: EgyptGeography

Egypt can be geographically divided into three regions: the western desert, the eastern desert, and the Sinai (24:61-63). The western desert is a huge, barren plain that covers the western two-thirds of the country west of the Nile (24:61). The eastern desert, a mountainous area of few settlements, lies between the Nile to the west

and the Red Sea to the east (24:61). The Sinai peninsula is another desert region, mountainous in its southern part (24:63).

Roads

Egyptian roads generally follow the Nile river system or the Red Sea coastline (24:56). The Nile delta, in particular, is crisscrossed by many roads (24:56). However, many roads were built either in the last century or during the two world wars, and the road system is poorly maintained. (24:70,56).

Population, Sanitation, Health Hazards

Ninety-six percent of the population of Egypt lives in the Nile valley or the Nile river delta (24:58). The dense population along the Nile creates health problems in towns without sanitation systems (24:103). Septic systems usually do not work because of extreme soil dryness, so waste is often buried in pits (24:103). Poor sanitation practices and polluted water cause widespread disease: for example, diarrhea causes one-half of all infant deaths in rural areas. Venereal diseases are epidemic in some parts of Egypt (13).

Religion and Culture

Egypt is one of the more liberal Arab countries. Alcohol is legal, and sexes are not strictly segregated (45:64). However, Egyptian society generally values men more than women (24:145). Although many Egyptian women are trained professional people, many others are still confined to the home (24:145). The younger generation of Egyptians is

more liberal about women's roles (17:4).

Climate

Egypt is climatically part of the northern African desert (9:15). Summers are generally hot and rainless, with the extreme northern coast temperature modified somewhat by the Mediterranean Sea (9:83). The highest average temperatures occur in July or August in the north, but usually occur in June in the southern part of the country (9:85). The months of October and November are warm, accompanied by higher humidity and more precipitation (9:80). The spring months of March, April, and May are hot and dry (9:82). Hot, driving windstorms may occur during this time, caused by an east wind from the Sahara (24:64). These winds can raise the temperature 19°C (35°F) in two hours (24:64). The storms sometimes last for days, causing great discomfort to people and animals, and possible crop damage (24:64).

Precipitation may vary widely from year to year (9:86). One day of rain can affect rainfall averages for years. Every part of Egypt can be completely dry in any one month (9:86). Most of the rain that does fall is north of 28 degrees latitude. The area south of this latitude is virtually rainless (9:87).

Thunderstorms are restricted mainly to the northern part of the country, with some areas averaging seven thunderstorms per year (9:88). Again, almost no thunderstorms occur south of 28 degrees latitude (9:88).

Wind is generally highest along the coastal areas, and decreases inland (9:92). Wind speed averages 9 to 12 miles per hour along the coast and 4 to 8 miles per hour inland (9:92).

Day-to-night temperature variation averages 10°C (18°F) near the coastal areas, and about 15°C (27°F) inland (9:21,31). For inland areas, this temperature variation is significant. Nights are usually much more comfortable than daytime (9:21,31).

Mean annual sunshine hours are about 3,200 for northern coastal areas, increasing to over 4,000 hours in the southern quarter of the country (9:19). Based on an average of 12 daylight hours per day, there are about 4,400 daylight hours in a year. Thus, the southern part of Egypt has sunshine over 90 percent of the daylight hours.

For the northern coast, the mean temperatures in January are 18°C maximum, 8°C minimum (65°F, 47°F). In July, the mean temperatures are 31°C and 21°C (87°F and 70°F) (48:125,127,133). Humidity in this region is fairly steady at about 70 percent year around (48:125,127,133).

Along the Red Sea, the mean temperatures in January are 22°C (71°F) for a high, 10°-13°C (50-55°F) for a low. For July, the average high is 34°C (94°F), and the average low 24°-27°C (75°-80°F) (48:195,201,203). Humidity normally falls in the 50-60 percent range (48:195,201,203).

In the interior, the normal maximum temperatures in January are 21°-24°C (70°-75°F); 4°-10°C (40°-50°F) for the average minimum. In

July, daytime temperatures average between 38°-43°C (100° and 110°F), lowering to 21°-27°C (70°-80°F) at night (48:139,143,145,184). Humidity is generally less than 50 percent (48:139,143,145,184).

In Cairo, the mean maximum temperature in January is 18°C (65°F); 9°C (48°F) for the mean minimum. In July, the average temperatures are 36°C (96°F) during the day, and 22°C (71°F) at night (48:168). Humidity normally is between 50 and 65 percent (48:168).

Briefing Notes for Egypt

Cameras. Cameras are prohibited in the vicinity of the aerodrome. No pictures of bridges or government buildings are allowed. Only tourist photography is allowed (41:68).

Clothing. Summer clothing is recommended May-October. Light winter clothing is more suitable November-April (41:68).

Electric Supply. 220V AC 50 Hz; plugs are 2-pin round (45:62).

Fixed Holidays. (Julian calendar) (45:63).

1 Jan	New Year's Day
8 Mar	Syrian Revolution Day
18 Jun	Evacuation Day
23 Jul	Anniversary of the Revolution
1 Sep	Libyan Revolution Day
24 Oct	Popular Resistance Day
23 Dec	Victory Day

Local Time. Greenwich Mean Time plus 2 hours (3 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 1900 hours in Cairo, 2000 hours during daylight savings time (41:65).

Military Rank and Insignia. (24:375)

Colonel	Eagle and 2 stars
Lt Colonel	Eagle and 1 star
Major	Eagle
Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Prohibited Items. Narcotics and raw cotton (45:61).

Weights and Measures. Metric system (see Appendix A) (45:62).

Airfield Summaries: Egypt

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about Egyptian airfields over 4,000 feet long.

How to Use This Section

There are two ways to locate an airfield in this section:

1. If only an approximate deployment location is known, first determine the deployment zone from Figure 5.2. Next, turn to the figure containing a map of that zone. This map shows airfield locations in the zone (each number on the map indicates an airfield location). Airfields

are numbered consecutively from north to south within each zone. Determine the number for your airfield, then turn the page to find the airfield summary corresponding to that number.

2. If the airfield name is known, locate the airfield in Table 5.2, note the appropriate zone, and go to the airfield summaries for the zone indicated. Page through the airfield summaries until you find your airfield. Another method is to look up the airfield name in the index at the end of this report and turn to the page listed.

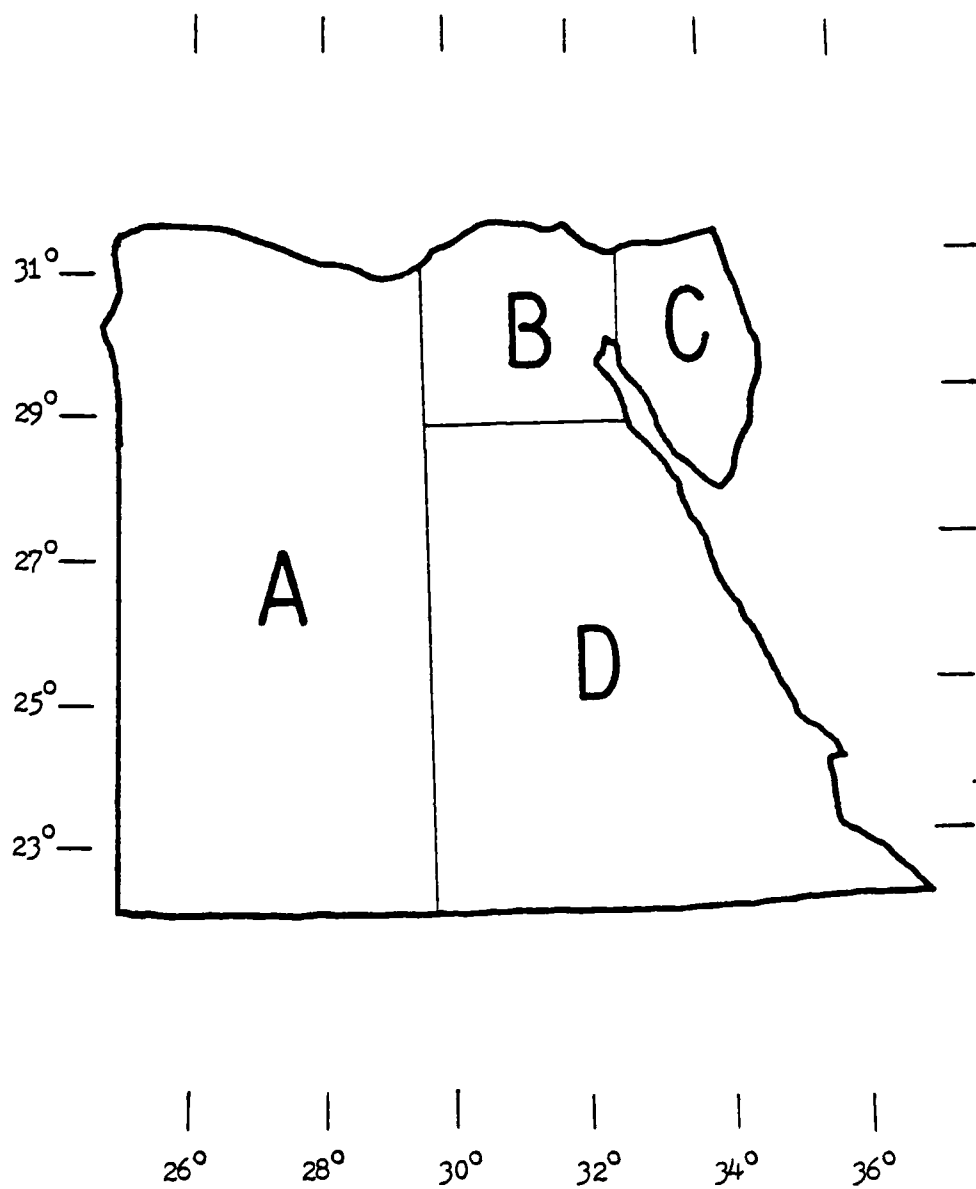


FIGURE 5.2
Airfield Location Zones For EGYPT

TABLE 5.2

Alphabetical List of EGYPTIAN Airfields Keyed to Zones

Airfield Name	Zone	Airfield Name	Zone
Abu Rudeis	C	Gebel Libni	C
Abu Rudeis New	C	Ghurd Abu Sanan	A
Abu Simbel	D	Habata	A
Abu Suwayr	B	Hod El Bida	B
Al Ismailiyah	B	Hulwan	B
Al Mansurah	B	Hurghada	D
Al Manzilah	B	Inshas	B
Al Rahmaniya	B	Jiyanklis New	C
Alexandria	B	Kafr Daud	B
Aswan	D	Kibrit	B
Asyut	D	Kom Awshim	B
Gebel El Basur	B	Luxor	D
Az Zaqaqiz	B	Mersa Matruh	A
Baluza	B	Minshat Sabri	
Beni Suef	B	Highway Strip	B
Bilbays	B	Misfad	C
Bilbays 2	B	New Valley	D
Bir Abu Rahal	D	Port Said (Bur Said)	B
Bir El Hamma	C	Quwaysina	B
Bir Hasanah	C	Ras Banas	D
Birma	B	Ras Gharib	D
Cairo Almaza	B	Ras Shukhayr	D
Cairo International	B	Ras Sudr	C
Cairo West	B	Refidm (Bir Jifjafah)	C
Dakhla Oasis New	A	Saiyah El Shirif	B
Daraw	D	Sidi Barrani	A
Deversoir	B	Siwa Oasis North	A
Dukhaylah	B	St. Catherine	C
El Arish	C	Uthman	A
El Minya	D	Wadi Abu Rish	B
El Tor	C	Wadi Abu Shihat	D
Embaba	B	Wadi Al Jandali	B
Faid	B		

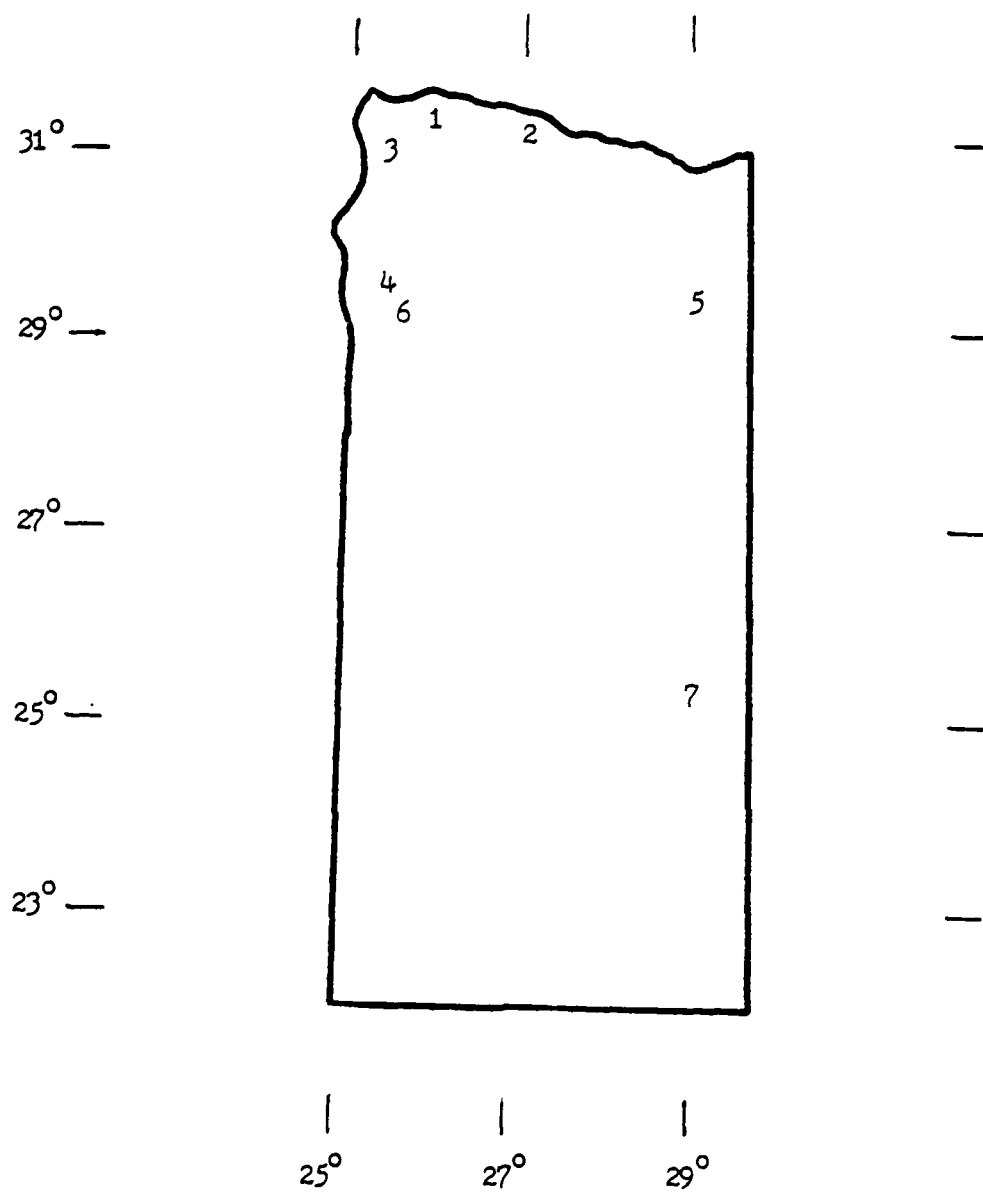


FIGURE 5.3
Airfields in EGYPT, Zone A

TABLE 5.3

Airfield Summary List for EGYPT, Zone A

1. SIDI BARRANI

Location: 31°28'N 25°51'E (28)
Users: no data
Pavement: no data
No. runways: 2 (28)
Runway length: 10,000 ft estimate (28)
Elevation: 320 ft (28)
Local relief: gentle slopes, near 300 ft (23:317)
Local veg: Mediterranean tendency; patches of grass
(23:319; 3)
Nearby large cities: none (23:I-17)

2. MERSA MATRUH

Location: 31°19'N 27°13'E (28)
Users: no data
Pavement: no data
No. runways: 2 (28)
Runway length: 10,000 ft estimate (28)
Elevation: 94 ft (28)
Local relief: gentle slopes, near 300 ft (23:317)
Local veg: Mediterranean tendency; patches of grass
(23:319; 3)
Nearby large cities: none (23:I-17)

3. HABATA

Location: 31°6'N 25°27'E (28)
Users: no data
Pavement: no data
No. runways: 2 (28)
Runway length: 10,000 ft estimate (28)
Elevation: 670 ft (28)
Local relief: gentle slopes, near 300 ft (23:317)
Local veg: Mediterranean tendency; patches of grass
(23:319; 3)
Nearby large cities: none (23:I-17)

TABLE 5.3 (cont.)

Airfield Summary List for EGYPT, Zone A

4. UTHMAN

Location: 29°34'N 25°34'E (28)
Users: no data
Pavement: no data
No. runways: 1 (28)
Runway length: 10,000 ft estimate (28)
Elevation: 450 ft (28)
Local relief: mostly gentle slopes; 100-300 ft (23:317)
Local veg: brief life cycle vegetation; desert (3)
Nearby large cities: none (23:I-17)

5. GHURD ABU SANNAN

Location: 29°33'N 29°02'E (10)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 5,500 ft (29)
Elevation: 820 ft (10)
Local relief: mostly gentle slopes; 100-300 ft (23:317)
Local veg: brief life cycle vegetation; desert (3)
Nearby large cities: none (23:I-17)

6. SIWA OASIS NORTH

Location: 29°21'N 25°33'E (28)
Users: no data
Pavement: no data
No. runways: 1 (28)
Runway length: 5,000 ft estimate (28)
Elevation: 330 ft (28)
Local relief: mostly gentle slopes; 100-300 ft (23:317)
Local veg: brief life cycle vegetation; desert (3)
Nearby large cities: none (23:I-17)

TABLE 5.3 (cont.)

Airfield Summary List for EGYPT, Zone A

7. DAKHLA OASIS NEW

Location: 25°27'N 29°01'E (29)

Users: no data

No. runways: 1 (10)

Runway length: 4,000 ft estimate (29)

Elevation: 492 ft (10)

Local relief: irregular plains; 100-300 ft; hills 10 miles
north (23:317; 29)

Local veg: desert and desert shrub; oasis 2 miles north
(15; 29)

Nearby large cities: none (23:I-17; 29)

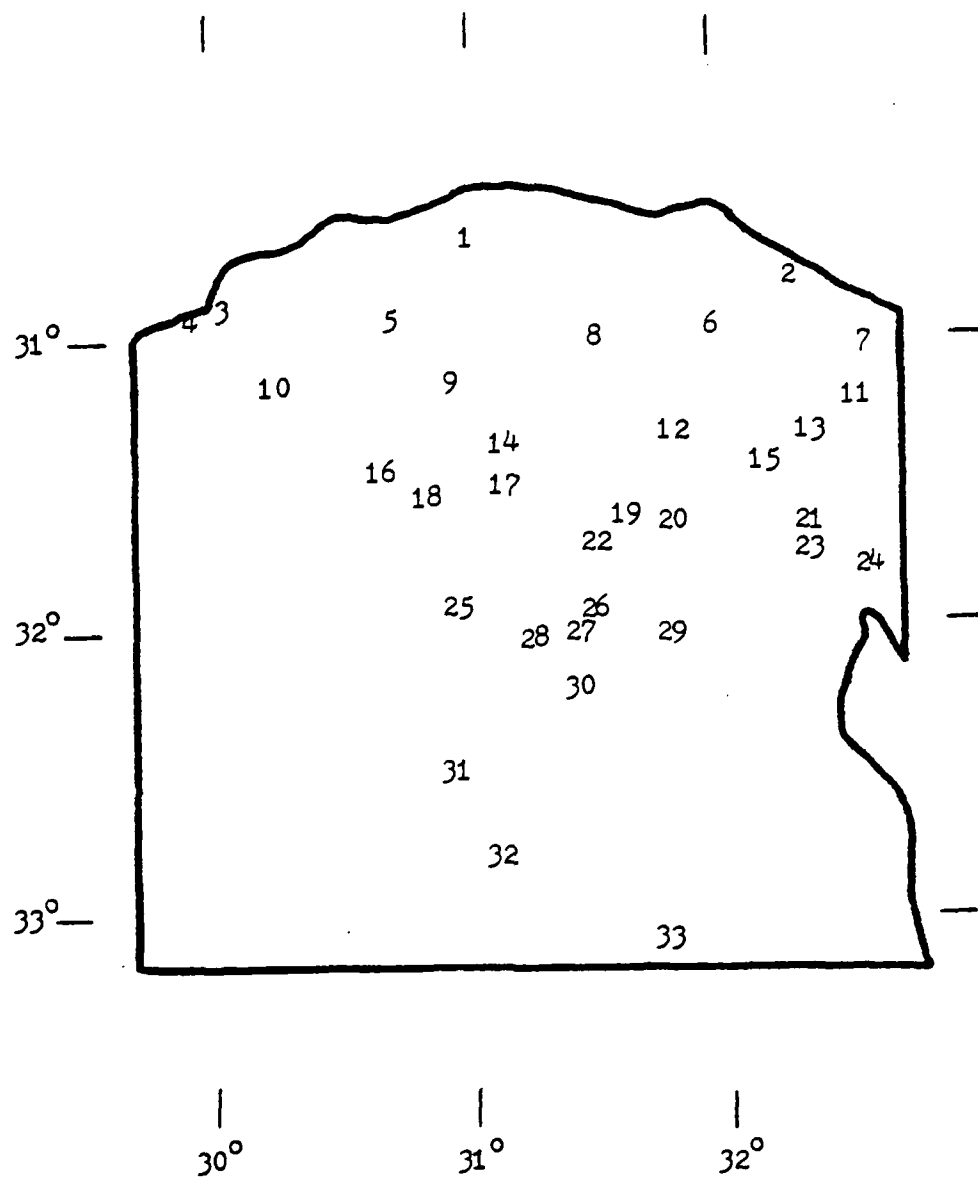


FIGURE 5.4
Airfields in EGYPT, Zone B

TABLE 5.4

Airfield Summary List for EGYPT, Zone B

1. SAIYAH EL SHIRIF

Location: 31°20'N 30°57'E (29)
 Users: no data
 Pavement: no data
 No. runways: 2 (29)
 Runway length: 12,000 ft estimate (29)
 Elevation: 15 ft (29)
 Local relief: level plain; under 100 ft (23:317)
 Local veg: introduced vegetation; local cultivation with
 irrigation (15; 29)
 Nearby large cities: Kafr El Sheikh, pop. 52,000, 20 miles
 south (23:I-17; 29)

2. PORT SAID (Bur Said)

Location: 31°17'N 32°14'E (37:B213)
 Users: civilian (37:B213)
 Pavement: asphalt (37:B213)
 No. runways: 1 (37:B213)
 Runway length: 4,900 ft (37:B213)
 Elevation: 6 ft (37:B213)
 Local relief: level; under 100 ft (23:317)
 Local veg: Mediterranean tendency; shrubs, grasses;
 swamplands (15; 29)
 Nearby large cities: Port Said, pop. 263,000, 5 miles east
 (23:I-17; 7)

3. ALEXANDRIA

Location: 31°11'N 29°57'E (37:B9)
 Users: military and civilian (37:B9)
 Pavement: asphalt (37:B9)
 No. runways: 2 (7)
 Runway length: 7,200 ft (37:B9)
 Elevation: 11 ft (37:B9)
 Local relief: level plain; under 100 ft (23:317)
 Local veg: Mediterranean tendency; shrubs, grasses;
 local cultivation (3; 29)
 Nearby large cities: Alexandria, pop. 2,700,000, 3 miles
 north (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

4. DUKHAYLAH

Location: 31°08'N 29°49'E (29)
Users: no data
Pavement: no data
No. runways: 2 (29)
Runway length: 6,500 ft estimate (29)
Elevation: 5 ft (29)
Local relief: level plain; under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses;
local cultivation (3; 29)
Nearby large cities: Alexandria, pop. 2,700,000, 10 miles
northeast (23:I-17; 29)

5. AL RAHMANIYA

Location: 31°03'N 30°39'E (29)
Users: no data
Pavement: no data
No. runways: 1 (29)
Runway length: 11,000 ft estimate (29)
Elevation: 18 ft (29)
Local relief: level plain; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation
with irrigation (15; 29)
Nearby large cities: Damanhur, pop. 190,000, 20 miles
west (23:I-17; 29)

6. AL MANZILAH

Location: 31°03'N 31°54'E (29)
Users: no data
Pavement: no data
No runways: 2 (10)
Runway length 12,000 ft estimate (29)
Elevation: 5 ft (10)
Local relief: level plains; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation
with irrigation (15; 29)
Nearby large cities: Al Mansurah, pop. 258,000, 50 miles
west (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

7. BALUZA

Location: 30°59'N 32°33'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 7,000 ft estimate (29)
Elevation: 50 ft (29)
Local relief: under 300 ft (23:317; 29)
Local veg: dwarf shrubs, grasses; brackish swampland
to the northwest (15; 29)
Nearby large cities: Port Said, pop. 263,000, 30 miles
northwest (23:I-17; 29)

8. AL MANSURAH

Location: 30°58'N 31°26'E (29)
Users: no data
Pavement: no data
No. runways: 2 (10)
Runway length: 12,000 ft estimate (29)
Elevation: 73 ft (10)
Local relief: level plains; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation
with irrigation (15; 29)
Nearby large cities: Al Mansurah, pop. 258,000,
10 miles northwest (23:I-17; 29)

9. BIRMA

Location: 30°50'N 30°56'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 13,000 ft estimate (29)
Elevation: 18 ft (10)
Local relief: level; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation
with irrigation (15; 29)
Nearby large cities: Tanta, pop. 284,000, 10 miles
southeast (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

10. JIYANKLIS NEW

Location: 30°49'N 30°12'E (29)
 Users: no data
 Pavement: no data
 No. runways: 2 (29)
 Runway length: 12,000 ft estimate (29)
 Elevation: 15 ft (29)
 Local relief: level plain; under 100 ft (23:317)
 Local veg: Mediterranean tendency; shrubs, grasses;
 local cultivation to the north and east (3; 29)
 Nearby large cities: Damanhur, pop. 190,000, 30 miles
 northeast (23:I-17; 29)

11. HOD EL BIDA

Location: 30°49'N 32°31'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (29)
 Runway length: 8,000 ft estimate (29)
 Elevation: 162 ft (29)
 Local relief: irregular plains, gentle slopes, 100-300 ft
 (23:317)
 Local veg: Mediterranean tendency; shrubs, grasses (15)
 Nearby large cities: Al Ismailiyah, pop. 145,000, 35 miles
 southwest (23:I-17, 29)

12. AZ ZAQAZIQ

Location: 30°36'N 31°40'E (29)
 Users: no data
 Pavement: no data
 No. runways: 2 (JNC -35)
 Runway length: 12,000 ft estimate (29)
 Elevation: 30 ft (11)
 Local relief: under 100 ft (23:317; 29)
 Local veg: introduced vegetation; local cultivation with
 irrigation (15; 29)
 Nearby large cities: Az-Zaqaziq, pop. 203,000, 10 miles
 west (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

13. AL ISMAILIYAH

Location: 30°36'N 32°14'E (37:B10)
Users: Egyptian Air Force (37:B10)
Pavement: asphalt (37:B10)
No. runways: 1 (29)
Runway length: 3,900 ft (37:B10)
Elevation: 39 ft (37:B10)
Local relief: under 100 ft (23:317)
Local veg: shrubs, grasses; local cultivation (15; 29)
Nearby large cities: Al Ismailiyah, pop. 145,000, 3 miles east (23:I-17, 29)

14. QUWAYSINA

Location: 30°35'N 31°8'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 10,000 ft estimate (29)
Elevation: 33 ft (10)
Local relief: level plain; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation with irrigation (15; 29)
Nearby large cities: Shibin El Kom, pop. 103,000, 10 miles west; Benha, pop. 64,000, 15 miles south; Cairo, pop. 5,084,000, 35 miles south (23:I-17; 29)

15. ABU SUWAYR

Location: 30°34'N 32°6'E (29)
Users: no data
Pavement: no data
No. runways: 3 (29)
Runway length: 10,000 ft estimate (29)
Elevation: 49 ft (29)
Local relief: under 100 ft (23:317)
Local veg: shrubs, grasses; local cultivation (15; 29)
Nearby large cities: Al Ismailiyah, pop. 145,000, 15 miles east; Zaqaziq, pop. 203,000, 50 miles west (23:I-17, 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

16. GEBEL EL BASUR

Location: 30°32'N 30°35'E (29)
Users: no data
Pavement: no data
No. runways: 3 (10)
Runway length: 12,000 ft estimate (29)
Elevation: 50 ft (10)
Local relief: level plains; under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses (15)
Nearby large cities: Tanta, pop. 285,000, 60 miles northeast
(23:I-17, 29)

17. MINSHAT SABRI HIGHWAY STRIP

Location: 30°31'N 31°7'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 11,000 ft estimate (29)
Elevation: 36 ft (10)
Local relief: level plain; under 100 ft (23:317)
Local veg: introduced vegetation; local cultivation with
irrigation (15; 29)
Nearby large cities: Shibin El Kom, pop. 103,000, 15 miles
northwest; Benha, pop. 64,000, 5 miles south; Cairo, pop.
5,084,000, 30 miles south (23:I-7; 29)

18. KAFR DAUD

Location: 30°28'N 30°47'E (29)
Users: no data
Pavement: no data
No. Runways: 1 (10)
Runway length: 11,000 ft estimate (29)
Elevation: 80 ft (10)
Local relief: level plain; under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses (15)
Nearby large cities: Shibin El Kom, pop. 103,000, 25 miles
northeast across the Nile; Tanta, pop. 285,000, 50 miles
northeast; Cairo, pop. 5,084,000, 60 miles southeast
(23:I-17, 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

19. BILBAYS

Location: 30°25'N 31°37'E (29)
Users: no data
Pavement: no data
No. runways: 5 (29)
Runway length: 13,000 ft estimate (29)
Elevation: 90 ft (29)
Local relief: under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses (15)
Nearby large cities: Bilbays, pop. 58,000, 5 miles west;
Cairo, pop. 5,084,000, 35 miles southwest (23:I-17; 29)

20. BILBAYS 2

Location: 30°25'N 31°39'E (29)
Users: no data
Pavement: no data
No. runways: 3 (29)
Runway length: 13,000 ft estimate (29)
Elevation: 166 ft (29)
Local relief: under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses (15)
Nearby large cities: Bilbays, pop. 58,000, 8 miles west;
Cairo, pop. 5,084,000, 35 miles southwest (23:I-17; 29)

21. DEVERSOIR

Location: 30°25'N 32°21'E (29)
Users: no data
Pavement: no data
No. runways: 2 (29)
Runway length: 5,500 ft estimate (29)
Elevation: 27 ft (29)
Local relief: under 100 ft (23:317)
Local veg: Shrubs, grasses; local cultivation (15; 29)
Nearby large cities: Al Ismailiyah, pop. 145,000, 15 miles
north; Suez, pop. 194,000, 35 miles south (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

22. INSHAS

Location: 30°20'N 31°28'E (29)
Users: no data
Pavement: no data
No. runways: 5 (10)
Runway length: 13,000 ft (10)
Elevation: 100 ft (10)
Local relief: under 100 ft (23:317)
Local veg: Mediterranean tendency; shrubs, grasses
(15; 29)
Nearby large cities: Bilbays, pop. 58,000, 10 miles northeast;
Cairo, pop. 5,084,000, 20 miles southwest (23:I-17; 29)

23. FAID

Location: 30°19'N 32°15'E (29)
Users: no data
Pavement: no data
No. runways: 5 (7)
Runway length: 12,000 ft estimate (29)
Elevation: 70 ft (29)
Local relief: under 100 ft (23:317)
Local veg: shrubs, grasses; local cultivation (15; 29)
Nearby large cities: Al Ismailiyah, pop. 145,000, 25 miles
north; Suez, pop. 194,000, 30 miles south (23:I-17; 29)

24. KIBRIT

Location: 30°15'N 32°29'E (29)
Users: no data
Pavement: no data
No. runways: 4 (29)
Runway length: 10,000 ft estimate (29)
Elevation: 22 ft (29)
Local relief: under 100 ft (23:317)
Local veg: shrubs, grasses; local cultivation (15; 29)
Nearby large cities: Suez, pop. 194,000, 10 miles south
(23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

25. CAIRO WEST

Location: 30°7'N 30°55'E (29)
Users: Egyptian Air Force
Pavement: no data
No. runways: 4 (29)
Runway length: 12,000 ft estimate (29)
Elevation: 492 ft (29)
Local relief: near 300 ft (23:317; 29)
Local veg: shrubs, grasses (15)
Nearby large cities: Cairo, pop. 5,084,000, 25 miles east
(23:I-17; 29)

26. CAIRO INTERNATIONAL

Location: 30°07'N 31°24'E (37:B52)
Users: military/civilian (37:B52)
Pavement: concrete (37:B52)
No. runways: 3 (7)
Runway length: 13,100 ft (37:B52)
Elevation: 381 ft (37:B52)
Local relief: under 300 ft (23:317; 29)
Local veg: shrubs, grasses (15)
Nearby large cities: Cairo, pop. 5,084,000, 5 miles west
(23:I-17; 29)

27. CAIRO ALMAZA

Location: 30°05'N 31°22'E (29)
Users: no data
Pavement: no data
No. runways: 4 (29)
Runway length: 8,000 ft estimate (29)
Elevation: 303 ft (29)
Local relief: under 300 ft (23:317; 29)
Local veg: shrubs, grasses (15)
Nearby large cities: Cairo, pop. 5,084,000, 1 mile west
(23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

28. EMBABA

Location: 30°04'N 31°11'E (37:B81)
 Users: civilian (37:B81)
 Pavement: asphalt (37:B81)
 No. runways: 1 (29)
 Runway length: 3,800 ft (37:B81)
 Elevation: 58 ft (37:B81)
 Local relief: under 100 ft (23:317)
 Local veg: introduced vegetation; local cultivation with
 irrigation (15; 29)
 Nearby large cities: Cairo, pop. 5,084,000, 2 miles east
 (23:I-17; 29)

29. WADI AL JANDALI

Location: 30°03'N 31°50'E (29)
 Users: no data
 Pavement: no data
 No. runways: 2 (29)
 Runway length: 13,000 ft estimate (29)
 Elevation: 800 ft (29)
 Local relief: under 300 ft; hills to north and south
 (23:317; 29)
 Local veg: shrubs, grasses (15)
 Nearby large cities: Cairo, pop. 5,084,000, 40 miles west
 (23:I-17; 29)

30. HULWAN

Location: 29°49'N 31°20'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (29)
 Runway length: 11,000 ft estimate (29)
 Elevation: 120 ft (29)
 Local relief: under 300 ft; hills to east (23:317; 29)
 Local veg: shrubs, grasses; local cultivation (15; 29)
 Nearby large cities: Cairo, pop. 5,084,000, 15 miles north
 (23:I-17; 29)

TABLE 5.4 (cont.)

Airfield Summary List for EGYPT, Zone B

31. KOM AWSHIM

Location: 29°34'N 30°53'E (29)
Users: no data
Pavement: no data
No. runways: 2 (10)
Runway length: 11,000 ft estimate (29)
Elevation: 00 ft (29)
Local relief: over 300 ft; hills to south and west
(23:317; 29)
Local veg: brief life cycle vegetation; desert (15)
Nearby large cities: Cairo, pop. 5,084,000, 40 miles
northeast; Al Fayoum, pop. 167,000, 25 miles south
(23:I-17; 29)

32. BENI SUEF

Location: 29°13'N 31°02'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 13,000 ft estimate (29)
Elevation: 108 ft (29)
Local relief: near 300 ft (23:317; 29)
Local veg: introduced vegetation; local cultivation with
irrigation (15; 29)
Nearby large cities: Al Fayoum, pop. 167,000, 15 miles
northwest; Beni Suef, pop. 118,000, 10 miles southeast
(23: I-17; 29)

33. WADI ABU RISH

Location: 28°58'N 31°41'E (29)
Users: no data
Pavement: no data
No. runways: 2 (10)
Runway length: 11,000 ft estimate (29)
Elevation: 1092 ft (10)
Local relief: under 500 ft; hills to east (23:317; 29)
Local veg: desert and desert shrub (15)
Nearby large cities: Beni Suef, pop. 118,000, 40 miles west
(23:I-17; 29)

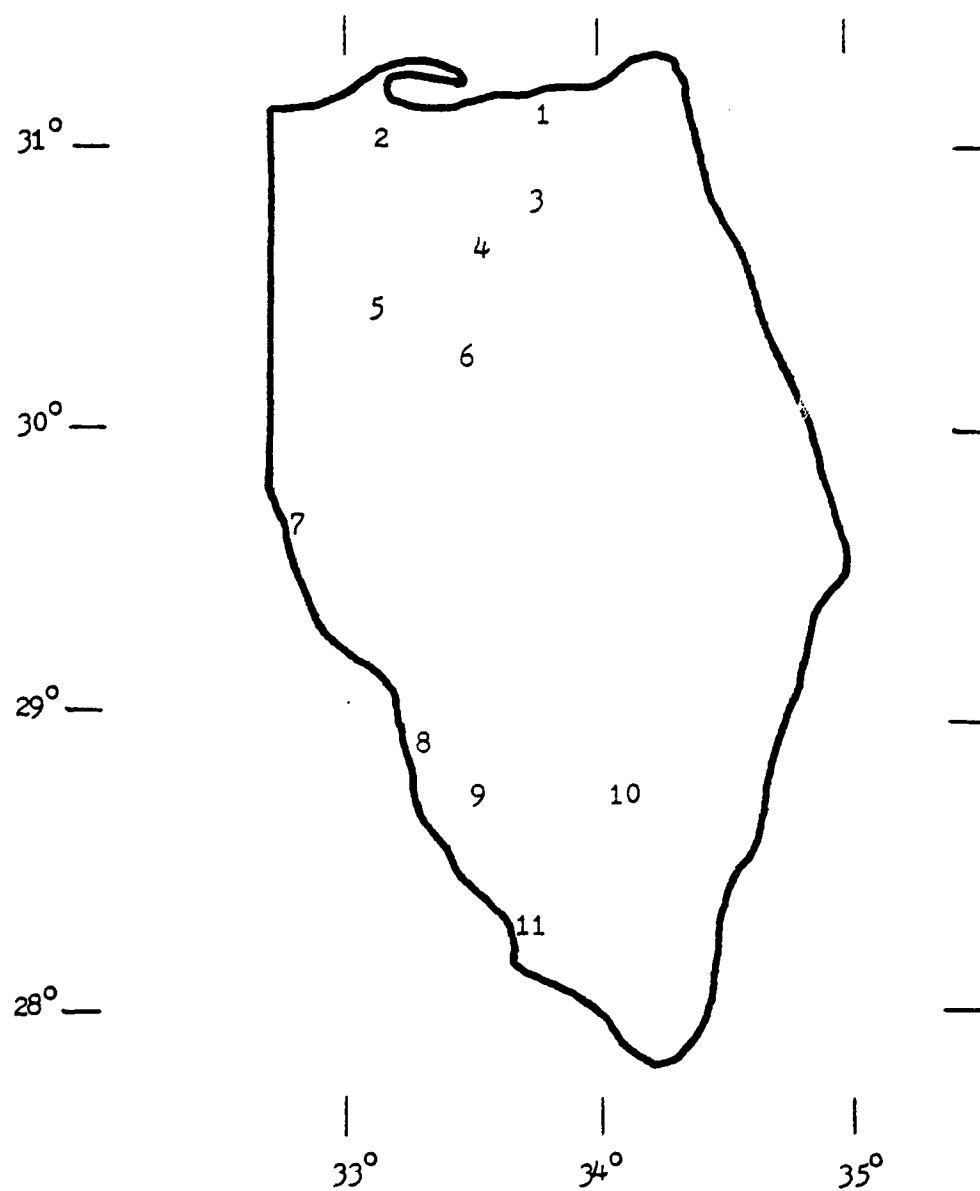


FIGURE 5.5
Airfields in EGYPT, Zone C

TABLE 5.5

Airfield Summary List for EGYPT, Zone C

1. EL ARISH

Location: 31°05'N 33°50'E (37:B79)
 Users: civilian (37:B79)
 Pavement: asphalt (37:B79)
 No. runways: 3 (37:B79)
 Runway length: 8,700 ft (37:B79)
 Elevation 151 ft (37:B79)
 Local relief: under 300 ft (23:317; 29)
 Local veg: Mediterranean tendency; shrubs, grasses (15)
 Nearby large cities: none; El Arish (town) 5 miles north
 (23:I-17; 29)

2. MISFAD

Location: 31°02'N 33°09'E (11)
 Users: no data
 Pavement: no data
 No. runways: 1 (GNC-12)
 Runway length: no data
 Elevation: 80 ft (11)
 Local relief: under 300 ft (23:317; 29)
 Local veg: Mediterranean tendency; shrubs, grasses (15)
 Nearby large cities: none; El Arish (town) 45 miles east
 (23:I-17; 29)

3. GEBEL LIBNI

Location: 30°48'N 33°47'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (29)
 Runway length: 10,000 ft estimate (29)
 Elevation: 360 ft (29)
 Local relief: under 300 ft (23:317; 29)
 Local veg: Mediterranean tendency; scattered shrubs, grasses
 (15; 23:319)
 Nearby large cities: none (23:I-17; 29)

TABLE 5.5 (cont.)

Airfield Summary List for EGYPT, Zone C

4. BIR EL HAMMA

Location: 30°38'N 33°31'E (11)
Users: no data
Pavement: no data
No. runways: 1 (11)
Runway length: no data
Elevation: 656 ft (11)
Local relief: under 300 ft; hills to the north nearby
(23:317; 29)
Local veg: shrubs, cactus, grasses; desert tendency (15)
Nearby large cities: none (23:I-17; 29)

5. REFIDM (Bir Jifjafah)

Location: 30°25'N 33°08'E (11)
Users: no data
Pavement: no data
No. runways: 2 (11)
Runway length: 11,000 ft estimate (29)
Elevation: 1070 ft (11)
Local relief: under 300 ft (23:317; 29)
Local veg: Mediterranean tendency; scattered shrubs, grasses
(15; 23:319)
Nearby large cities: El Ismailiya, pop. 145,000, 60 miles
west (23:I-17; 29)

6. BIR HASANAH

Location: 30°11'N 33°22'E (29)
Users: no data
Pavement: no data
No. runways: 1 (11)
Runway length: 12,000 ft estimate (29)
Elevation: 1,312 ft (11)
Local relief: under 300 ft; hills to the northeast and
west (23:317; 29)
Local veg: Mediterranean tendency; scattered shrubs, grasses
(15; 23:319)
Nearby large cities: Suez, pop. 194,000, 60 miles east
(23:I-17; 29)

TABLE 5.5 (cont.)

Airfield Summary List for EGYPT, Zone C

7. RAS SUDR

Location: 29°36'N 32°41'E (37:B218)
 Users: private (37:B218)
 Pavement: asphalt (37:B218)
 No. runways: 1 (8)
 Runway length: 5,800 ft (37:B218)
 Elevation: 49 ft (37:B218)
 Local relief: under 300 ft; hills to the east (23:317; 29)
 Local veg: Mediterranean tendency; scattered shrubs, grasses
 (15; 23:319)
 Nearby large cities: Suez, pop. 194,000, 30 miles north
 (23:I-17; 29)

8. ABU RUDEIS

Location: 28°54'N 33°12'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (11)
 Runway length: 7,000 ft estimate (29)
 Elevation: 400 ft (11)
 Local relief: relatively level near coast; mountains nearby
 to the east (23:317; 29)
 Local veg: Mediterranean tendency; scattered shrubs, grasses
 (15; 23:319)
 Nearby large cities: Suez, pop. 194,000, 70 miles north
 (23:I-17; 29)

9. ABU RUDEIS NEW

Location: 28°41'N 33°21'E (11)
 Users: no data
 Pavement: no data
 No. runways: 1 (11)
 Runway length: no data
 Elevation: 400 ft (11)
 Local relief: steep mountains to the east, local relief over
 5,000 ft (23:317; 29)
 Nearby large cities: Suez, pop. 194,000, 80 miles north
 (23:I-17; 29)

TABLE 5.5 (cont.)

Airfield Summary List for EGYPT, Zone C

10. ST. CATHERINE

Location: 28°41'N 34°04'E (37:B229)
Users: civilian (37:B229)
Pavement: asphalt (37:B229)
No. runways: 1 (11)
Runway length: 6,200 ft (37:B229)
Elevation: 4,360 ft (37:B229)
Local relief: over 5,000 ft; mountains (23:317; 29)
Local veg: desert and desert shrub; tropical tendency
(15; 23:319)
Nearby large cities: none (23:I-17; 29)

11. EL TOR

Location: 28°13'N 33°38'E (37:B81)
Users: civilian (37:B81)
Pavement: asphalt (37:B81)
No. runways: 1 (11)
Runway length: 5,200 ft (37:B81)
Elevation: 70 ft (37:B81)
Local relief: relatively level near coast; steep mountains
nearby to the east (23:317; 29)
Local veg: Mediterranean tendency; scattered shrubs, grasses
(15; 23:319)
Nearby large cities: none (23:I-17; 29)

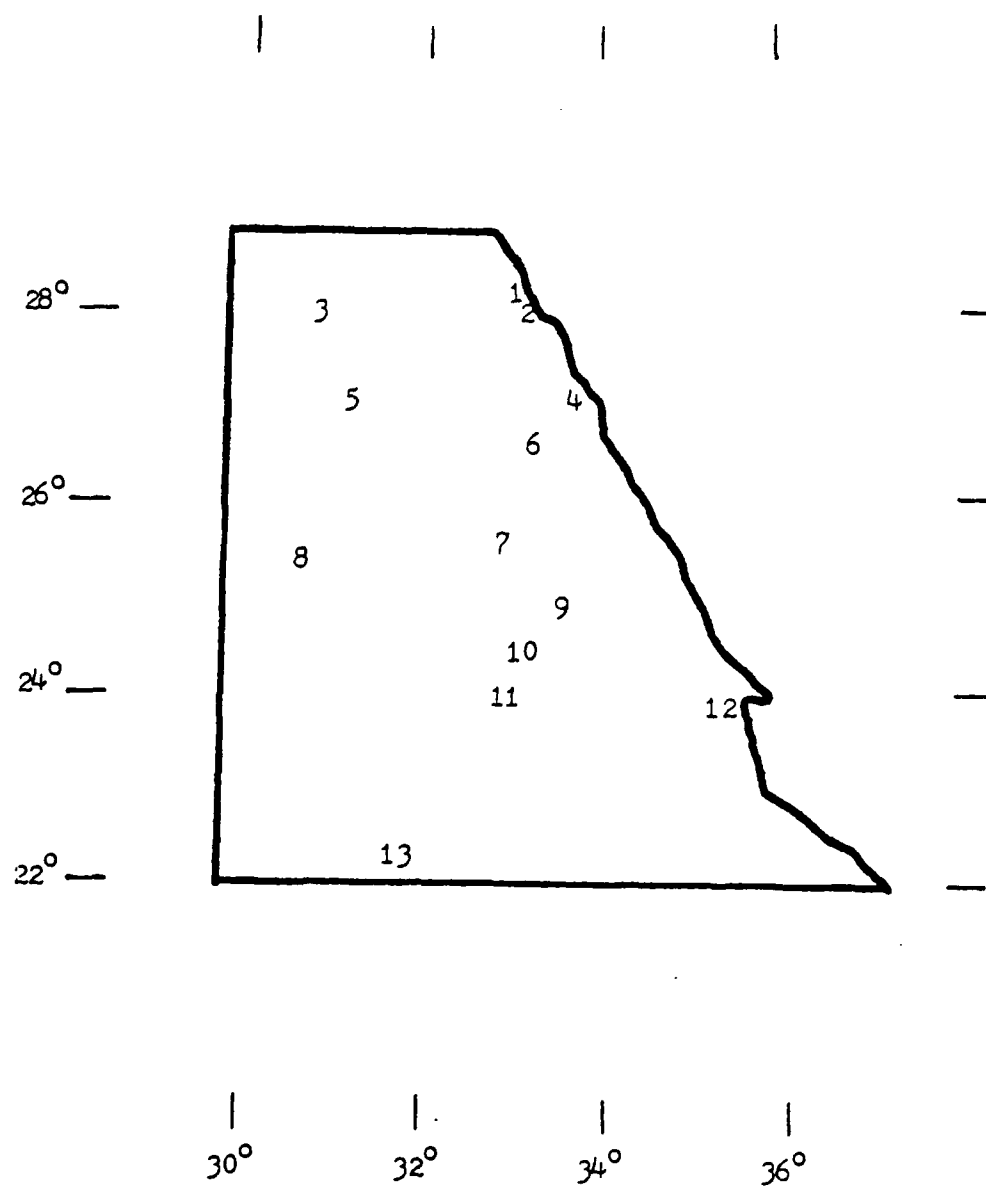


FIGURE 5.6
Airfields in EGYPT, Zone D

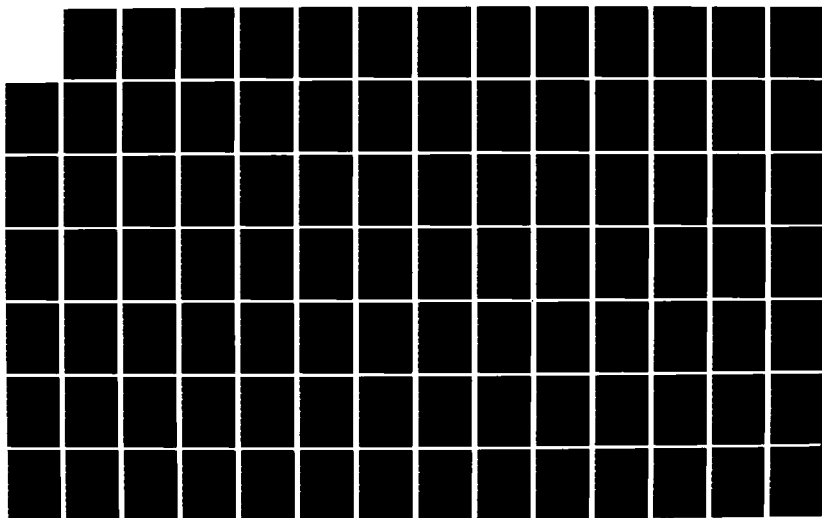
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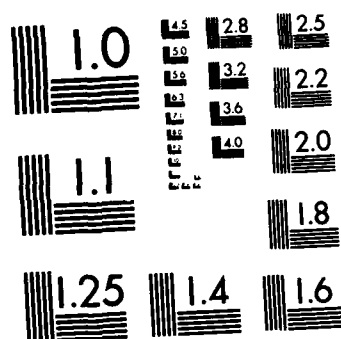
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TABLE 5.6

Airfield Summary List for EGYPT, Zone D

1. RAS GHARIB

Location: 28°17'N 33°07'E (29)
 Users: no data
 Pavement: no data
 No. runways: 3 (29)
 Runway length: 7,000 ft estimate (29)
 Elevation: 6 ft (10)
 Local relief: under 300 ft near coast; mountains 10 miles west (23:317; 29)
 Local veg: desert and desert shrub (15)
 Nearby large cities: none (23:I-17; 29)

2. RAS SHUKHAYR

Location: 28°07'N 33°17'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (10)
 Runway length: 4,800 ft (29)
 Elevation: 50 ft (10)
 Local relief: under 300 ft; mountains to the west (23:317; 29)
 Local veg: desert and desert shrub (15)
 Nearby large cities: none (23:I-17; 29)

3. EL MINYA

Location: 28°06'N 30°43'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (10)
 Runway length: 11,000 ft estimate (29)
 Elevation: 128 ft (10)
 Local relief: under 300 ft; hills across the Nile to the east (23:317; 29)
 Local veg: introduced vegetation; local cultivation with irrigation (15; 29)
 Nearby large cities: El Minya, pop. 146,000, 3 miles east (23:I-17; 29)

TABLE 5.6 (cont.)

Airfield Summary List for EGYPT, Zone D

4. HURGHADA

Location: 27°12'N 33°47'E (29)
 Users: no data
 Pavement: no data
 No. runways: 2 (10)
 Runway length: 11,000 ft estimate (29)
 Elevation: 171 ft (10)
 Local relief: under 300 ft; mountains 10-20 miles west
 (29)
 Local veg: desert and desert shrub (15)
 Nearby large cities: none; Hurghada (town) 5 miles northeast
 (23:I-17; 29)

5. ASYUT

Location: 27°02'N 31°02'E (37:B18)
 Users: civilian (37:B18)
 Pavement: asphalt (37:B18)
 No. runways: 1 (10)
 Runway length: 9,800 ft (37:B18)
 Elevation: 774 ft (37:B18)
 Local relief: near 300 ft (23:317; 29)
 Local veg: shrubs, cactus, grasses; desert tendency; local
 irrigation (15; 29)
 Nearby large cities: Asyut, pop. 214,000, 15 miles southwest
 (23:I-17; 29)

6. WADI ABU SHIHAT

Location: 26°35'N 33°8'E (10)
 Users: no data
 Pavement: no data
 No. runways: 2 (10)
 Runway length: no data
 Elevation: 1,000 ft estimate (29)
 Local relief: over 300 ft; mountains to east, hills to west
 (23:317; 29)
 Local veg: desert and desert shrub (15)
 Nearby large cities: Qena, pop. 69,000, 40 miles southwest
 (23:I-17; 29)

TABLE 5.6 (cont.)

Summary List for EGYPT, Zone D

7. NEW VALLEY

Location: 25°29'N 30°36'E (37:B191)
Users: military and civilian (37:B191)
Pavement: asphalt (37:B191)
No. runways: 1 (10)
Runway length: 9,800 ft (37:B191)
Elevation: 190 ft (37:B191)
Local relief: irregular plains; 100-300 ft; hills to the northwest (23:317; 29)
Local veg: brief life cycle vegetation; desert (15)
Nearby large cities: none (23:I-17; 29)

8. LUXOR

Location: 25°04'N 32°42'E (37:B165)
Users: military and civilian (37:B165)
Pavement: asphalt (37:B165)
No. runways: 2 (GNC-12)
Runway length: 9,800 ft (37:B165)
Elevation: 288 ft (37:B165)
Local relief: over 300 ft (23:317; 29)
Local veg: brief life cycle vegetation; desert; local irrigation (15; 29)
Nearby large cities: Qena, pop. 69,000, 40 miles north; Luxor, pop. 78,000, 5 miles west (23:I-17; 29)

9. BIR ABU RAHAL

Location: 25°00'N 33°31'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 12,000 ft (10)
Local relief: tablelands and plateaus; gentle slopes; local relief over 300 ft (23:317; 29)
Local veg: brief life cycle vegetation; shrubs; desert (15)
Nearby large cities: none (23:I-17; 29)

TABLE 5.6 (cont.)

Airfield Summary List for EGYPT, Zone D

10. DARAW

Location: 24°25'N 32°56'E (29)
Users: no data
Pavement: no data
No. runways: 1 (10)
Runway length: 11,000 ft estimate (29)
Elevation: 325 ft (10)
Local relief: under 300 ft (23:317; 29)
Local veg: introduced vegetation; local cultivation with
irrigation (15; 29)
Nearby large cities: none; Kom Ombo (town) 5 miles north
(23:I-17; 29)

11. ASWAN

Location: 23°58'N 32°48'E (37:B18)
Users: military and civilian (37:B18)
Pavement: asphalt (37:B18)
No. runways: 1 (10)
Runway length: 11,100 ft
Elevation: 656 ft (37:B18)
Local relief: over 300 ft (23:317; 32)
Local veg: brief life cycle vegetation; desert (15)
Nearby large cities: Aswan, pop. 144,000, 10 miles north
(23:I-17; 32)

12. RAS BANAS

Location: 23°58'N 35°28'E (32)
Users: military
Pavement: no data
No. runways: 3 (32)
Runway length: 9,000 ft estimate (32)
Elevation: 100 ft (29)
Local relief: over 300 ft; mountains to the west
(23:317; 32)
Local veg: desert tendency; shrubs, grasses (15)
Nearby large cities: none (23:I-17; 32)

TABLE 5.6 (cont.)

Airfield Summary List for EGYPT, Zone D

13. ABU SIMBEL

Location: 22°22'N 31°37'E (37:B3)
Users: civilian (37:B3)
Pavement: concrete (37:B3)
No. runways: 1 (32)
Runway length: 8,200 ft (37:B3)
Elevation: 615 ft (37:B3)
Local relief: under 500 ft (23:317; 32)
Local veg: brief life cycle vegetation; desert (15)
Nearby large cities: none (23:I-17; 32)

CHAPTER VI
DEPLOYMENT LOCATION SPECIFIC INFORMATION: SAUDI ARABIA

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Saudi Arabia. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Saudi Arabia. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, Saudi Arabian rank and insignia, uniform recommendations, and photograph restrictions. The last part of the chapter contains airfield summaries of 70 Saudi Arabian airfields large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 6.1 and the alphabetical airfield listing in Table 6.1. Mark the approximate airfield location on the map in Figure 6.1. Keeping this location in mind, read the entire narrative description of Saudi Arabia, focusing on the information that applies more specifically to your deployment area.

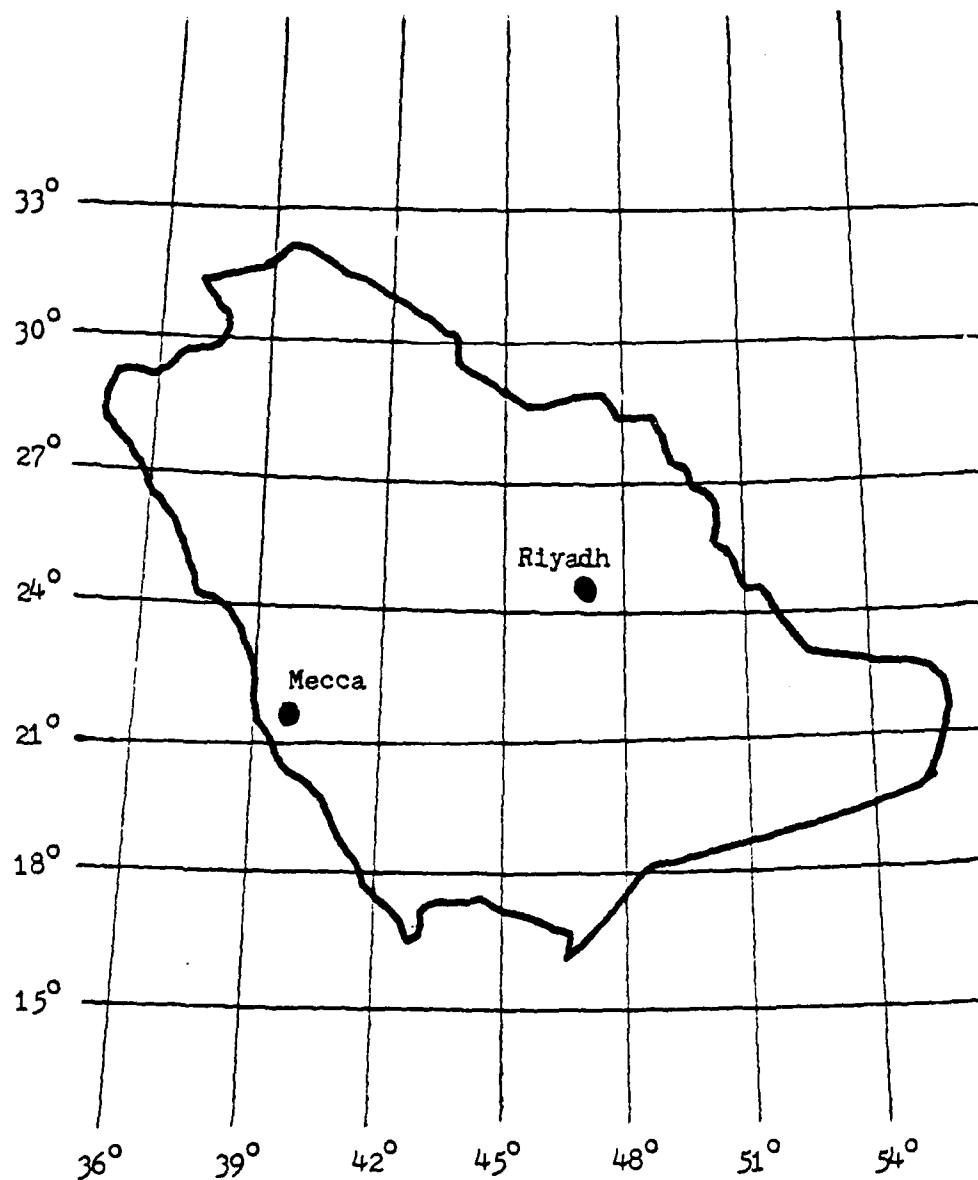


FIGURE 6.1

Map of SAUDI ARABIA with Latitude and Longitude References

TABLE 6.1

Alphabetical List of SAUDI ARABIAN Airfields and their Coordinates

Airfield Name	Geographic Coordinates
Abha	18°14'N 42°39'E
Abqaiq	25°55'N 49°36'E
Abu Ali	27°19'N 49°35'E
Abu Hadriya Southwest	27°18'N 48°58'E
Al Bir Highway Strip	28°53'N 36°10'E
Al Hanakiyah	24°53'N 40°30'E
Al Jouf	29°48'N 40°05'E
Al Kharj	24°03'N 47°25'E
Al Musannah Southeast	28°30'N 47°02'E
Al Udayliyah	25°09'N 49°20'E
Al Wadia	27°47'N 47°04'E
Al Wariah	27°50'N 47°26'E
Alhasa	25°25'N 49°28'E
Arar	30°55'N 41°09'E
Ash Shaqra	25°18'N 45°15'E
Baha (Aqiq)	20°18'N 41°38'E
Bisha	19°59'N 42°37'E
Dhahran International (King Abdul Aziz AB)	26°16'N 50°10'E
Gassim	26°18'N 43°46'E
Gizan	16°54'N 42°35'E
Guriat	31°24'N 37°15'E
Hafr Al-Batin	27°57'N 45°33'E
Hail	27°27'N 41°42'E
Haql	29°17'N 34°56'E
Hawiyah	24°29'N 48°59'E
Jalamid	31°17'N 40°05'E
Jeddah International	21°30'N 39°12'E
Jidhanah	19°54'N 41°56'E
Jubail	27°03'N 49°24'E
Jubail Nas	26°58'N 49°42'E
Khalfan	22°45'N 53°15'E
Khamis Mushait (King Khalid Air Base)	18°19'N 42°49'E
Kidan	22°22'N 53°15'E
King Abdul	24°59'N 46°22'E
King Abdul Aziz International (Jeddah New)	21°41'N 39°09'E
King Khalid Military City	27°48'N 45°30'E
Lugfah	23°41'N 50°31'E
Madinah	24°33'N 39°42'E
Majma	25°55'N 45°23'E

TABLE 6.1 (cont.)

Alphabetical List of SAUDI ARABIAN Airfields and their Coordinates

Airfield Name	Geographic Coordinates
Mecca	21°27'N 39°59'E
Mussalyn	19°45'N 40°52'E
Nariyah	27°29'N 48°28'E
Nejran	17°37'N 44°26'E
Nita	27°15'N 48°30'E
Petroline 3	25°11'N 47°30'E
Petroline 6	24°43'N 44°57'E
Qaisumah	28°20'N 46°08'E
Rafha	29°38'N 43°29'E
Ras Al Mishab	28°06'N 48°36'E
Ras Tanura	26°45'N 49°48'E
Riyadh	24°43'N 46°44'E
Sharurah	17°25'N 47°06'E
Shaybah	22°32'N 53°15'E
Shaybah F27	22°30'N 53°59'E
Sulayel (As Sulayyil)	20°28'N 45°36'E
Tabuk (King Faisal AB)	28°22'N 36°38'E
Taif (Crown Prince Fahd AB; Mecca East)	21°29'N 40°33'E
Tanajib	27°52'N 48°45'E
Thumama	25°14'N 46°37'E
Turaif	31°42'N 38°44'E
Turaif West	31°43'N 38°32'E
Ugtah Highway Strip	24°47'N 50°44'E
Um Lejj	25°04'N 37°17'E
Urjun	26°46'N 48°45'E
Wabrah	27°32'N 47°24'E
Wadi Al Musayr	28°09'N 34°59'E
Wejh	26°12'N 36°29'E
Yenbo	24°09'N 38°04'E
Zamul	22°36'N 55°11'E
Zararah New	22°41'N 53°59'E

Demographic and Geographic Background: Saudi Arabia

Geography

Saudi Arabia is a land of barren mountains and rocky or sandy deserts. The western part of the country near the Red Sea contains a mountain chain running north to south. The northern mountains are barren, but the southern mountains have some vegetation (26:50). A rocky plateau extends from the east slopes of the mountains into the central part of the country. This plateau contains occasional small sandy deserts and isolated mountains (26:51). The eastern part of the country is desert land that is increasingly barren toward the south. The southern desert, called the empty quarter, is "one of the most forbidding sand deserts in the world," and is virtually waterless and uninhabited (26:53).

Roads

A major effort at road construction in Saudi Arabia resulted in trunk roads connecting all major population centers by 1975. A systematic maintenance program is in effect. These roads were built to American standards, and are usually 20 to 30 feet wide (26:59).

Population, Sanitation, Health Hazards

Major Saudi Arabian cities are Riyadh (ree-AHD), population 750,000; Jeddah (JED-ah), 700,000; Mecca (MEK-ah), 400,000; Medina (mah-DEE-nah), 200,000; and Dhahran (dah-RAHN), 150,000 (45:187). Mecca and Medina are holy cities, and entry is restricted to Moslems (19:15).

Many Saudis lack knowledge about hygienic practices (26:79). Rural wells are often contaminated, so all water should be boiled before drinking. Flies proliferate (26:77,79).

The greatest health hazards to Prime BEEF team members are contaminated water, heat prostration, and eye trouble from sun glare and blowing sand (41:202).

Religion and Culture

Saudi Arabia is a strict Moslem country s means (19:21):

1. Alcohol is forbidden.
2. Women are segregated from men at work.
3. Women cannot drive.
4. Shops shut down five times a day for prayer.
5. Prime BEEF team members will probably be confined to their own military compound.

Religion is a fundamental way of life in Saudi Arabia, and all laws and administrative actions are enacted within the framework of the Islamic religious law (19:14). Saudi Arabia intends to modernize while protecting its religion and culture from western cultural influences (19:20). For this reason, foreigners are usually not permitted to travel outside their area of work (19:21). As stated earlier, Mecca and Medina are holy cities that only Moslems can enter. DO NOT go beyond the warning signs, or you will be arrested (19:15). Additionally, Islam forbids representation of the human body. DO NOT take pictures of Arabs without their permission (45:194).

Some of the religious and social courtesies covered in Chapter IV are different in Saudi Arabia. The differences are outlined below:

DO --show respect for praying Moslems by stopping, standing to one side, and talking quietly (and only if necessary) (19:17).

DO NOT --use the word "Mohammedon". Use Muslim or Moslem (19:17).

--smoke, eat, or drink in front of fasting Arabs during the month long fast of Ramadan. Westerners can eat, but discreetly (19:15).

--visit a Saudi between 2-4 p.m. This is traditionally a rest time (19:78).

--refuse coffee. Hold out your cup and rock it gently to signify enough after you have been served three times (19:80).

--discuss religion, politics, or sex with Saudis (19:80).

Be prepared to do business with relatively young people. A short average life span (30-40 years in 1973) leads to many young, well-educated Saudis filling responsible positions (19:8).

Climate

The climate in Saudi Arabia is mostly hot and dry.

The interior of the country is very hot and dry in the summer, cool in the winter, with a small amount of rainfall possible during the winter and spring. The annual average temperature range is 20°C (36°F) (38:216). During the summer in the interior, intense heat begins shortly after sunrise and lasts until sunset. The nights are relatively cool, with an average day-to-night temperature variation of 15°-19°C (27°-34°F) (26:85; 38:217).

The coastal climate along the Red Sea and Persian Gulf is

somewhat cooler but more humid. Daytime temperatures are usually below 38°C (100°F), but relative humidity is generally over 85 percent (26:53). Thunderstorms are possible near the coasts, and severe sand and dust storms may occur in late spring and early summer (38:219; 26:53).

The extreme southwest corner of Saudi Arabia has a temperate rainy climate. The mountains in this area are subject to monsoon rains between October and March. Rainfall in the rest of the country is low and erratic (26:54).

Briefing Notes for Saudi Arabia

Electric Supply. Varies and can be erratic. Normally 100/120V AC 60 Hz or 220V AC 50 Hz (45:192).

Fixed Holidays. (Julian calendar) (45:193).

5 Sep National Day

Local Time. Greenwich Mean Time plus 3 hours (4 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2000 hours in Riyadh, 2100 hours during daylight savings time (41:201).

Military Rank and Insignia. (26:80)

Colonel	Eagle and 2 stars
Lt Colonel	Eagle and 1 star
Major	Eagle
Captain	3 stars
1 Lt	2 stars

2 Lt

1 star

Photos. No photos of military objects, women, or civilian or military aerodromes. No aerial photography (41:202)

Prohibited Items.

- a. Alcoholic beverages (45:191).
- b. Narcotics (45:191).
- c. Contraceptives (45:191).
- d. Pornographic literature (45:191).
- e. Pork, pork meat products, and pig skin articles (45:191).
- f. Written articles (newspapers, magazines, etc.) derogatory of the Saudi government or praising communism (41:201).
- g. Any religious literature except for personal use (41:201).

Uniforms. Summer uniforms are recommended all year (41:201).

Weights and Measures. Metric system (see Appendix A) (45:193).

Airfield Summaries: Saudi Arabia

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about Saudi Arabian airfields over 4,000 feet long.

How to Use This Section

There are two ways to locate an airfield in this section:

1. If only an approximate deployment location is known, first determine the deployment zone from Figure 6.2. Next, turn to the figure

containing a map of that zone. This map shows airfield locations in the zone (each number on the map indicates an airfield location). Airfields are numbered consecutively from north to south within each zone. Determine the number for your airfield, then turn the page to find the airfield summary corresponding to that number.

2. If the airfield name is known, locate the airfield in Table 6.2, note the appropriate zone, and go to the airfield summaries for the zone indicated. Page through the airfield summaries until you find your airfield. Another method is to look up the airfield name in the index at the end of this report and turn to the page listed.

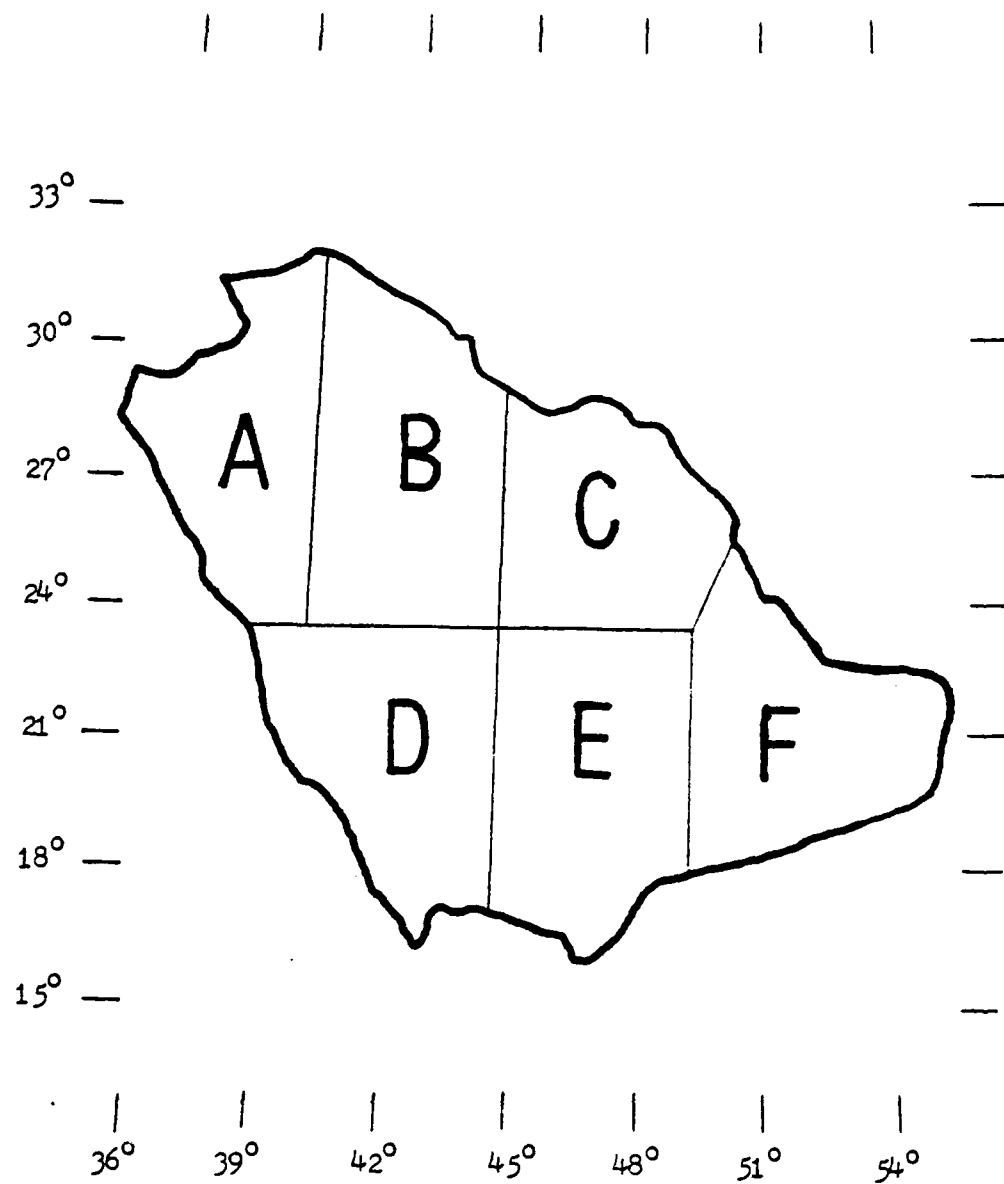


FIGURE 6.2
Airfield Location Zones For SAUDI ARABIA

TABLE 6.2

Alphabetical List of SAUDI ARABIAN Airfields Keyed to Zones

Airfield Name	Zone	Airfield Name	Zone
Abha	D	King Khalid	
Abqaiq	C	Military City	C
Abu Ali	C	Lugfah	F
Abu Hadriya Southwest	C	Madinah	A
Al Bir Highway Strip	A	Majma	C
Al Hanakiyah	B	Mecca	D
Al Jouf	B	Mussalyn	D
Al Kharj	C	Nariyah	C
Al Musannah Southeast	C	Nejran	D
Al Udayliyah	C	Nita	C
Al Wadia	C	Petroline 3	C
Al Wariah	C	Petroline 6	C
Alhasa	C	Qaisumah	C
Arar	B	Rafha	B
Ash Shaqra	C	Ras Al Mishab	C
Baha (Aqiq)	D	Ras Tanura	C
Bisha	D	Rihadh	C
Dhahran International		Sharurah	E
(King Abdul Aziz AB)	C	Shaybah	F
Gassim	B	Shaybah F27	F
Gizan	D	Sulayel (As Sulayyil)	E
Guriat	A	Tabuk (King Faisal AB)	A
Hafr Al-Batin	C	Taif (Crown Prince	
Hail	B	Fahd AB; Mecca East	D
Haql	A	Tanajib	C
Hawiyah	C	Thumama	C
Jalamid	B	Turaif	A
Jeddah International	D	Turaif West	A
Jidhanah	D	Ugtah Highway Strip	F
Jubail	C	Um Lejj	A
Jubail Nas	C	Urjun	C
Khalfan	F	Wabrah	C
Khamis Mushait (King		Wadi Al Musayr	A
Khalid Air Base)	D	Wejh	A
Kidan	F	Yenbo	A
King Abdul	C	Zamul	F
King Abdul Aziz Inter-		Zararah New	F
national (Jeddah New)	D		

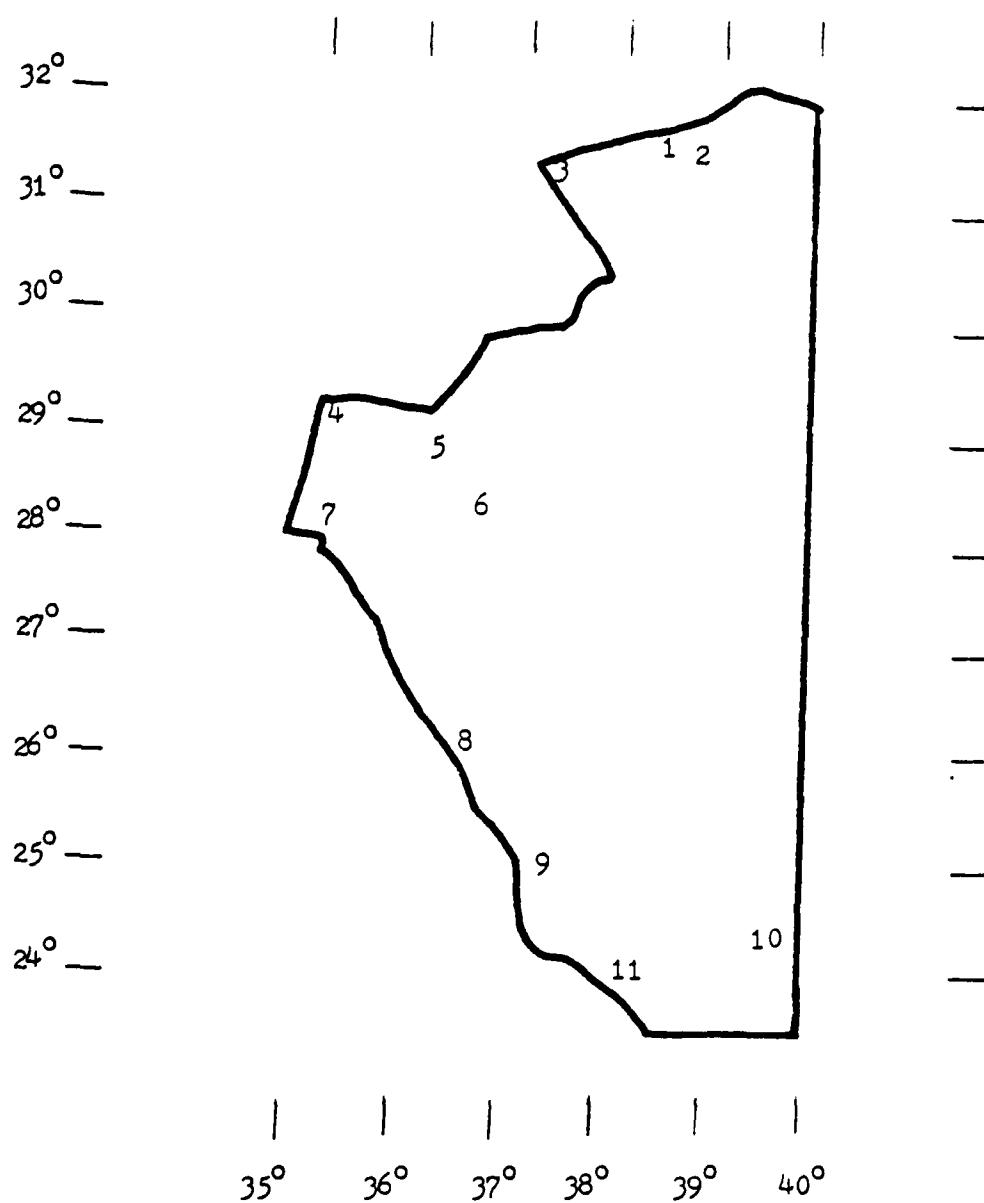


FIGURE 6.3
Airfields in SAUDI ARABIA, Zone A

TABLE 6.3

Airfield Summary List for SAUDI ARABIA, Zone A

1. TURAIF WEST

Location: 31°43'N 38°32'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 7,500 ft (29)
 Elevation: 2598 ft (11)
 Local relief: hills; local relief less than 1000 ft
 (23:317; 29)
 Local veg: perennial formations; grasses, shrubs; desert
 (15; 23:319)
 Nearby large cities: none. At Turayf (town) 10 miles east
 (23:I-23; 29)

2. TURAIF

Location: 31°42'N 38°44'E (37:B272)
 Users: civilian (37:B272)
 Pavement: asphalt (37:B272)
 No. runways: 1 (8)
 Runway length: 7,000 ft (37:B272)
 Elevation: 2,873 ft (37:B272)
 Local relief: hills; local relief less than 1,000 ft
 (23:317; 29)
 Local veg: perennial formations: grasses, shrubs; desert
 (15; 23:319)

3. GURIAT

Location: 31°24'N 37°15'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 5,500 ft (11)
 Elevation: 1,870 ft (11)
 Local relief: hills; local relief less than 1,000 ft
 (23:317; 29)
 Local veg: perennial formations; grasses, shrubs; desert
 (15; 23:319)
 Nearby large cities: none. Al Ugaylah (town) 10 miles
 southeast (23:I-23; 29)

TABLE 6.3 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone A

4. HAQL

Location: 29°17'N 34°56'E (29)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 6,500 ft (29)
Elevation: 350 ft (29)
Local relief: steep mountains; local relief over 5,000 ft;
Gulf of Aqaba to the west (23:317; 29)
Local veg: shrubs, cactus, grasses; desert tendency
(15; 23:319)
Nearby large cities: none (23:I-21; 29)

5. AL BIR HIGHWAY STRIP

Location: 28°53'N 36°10'E (29)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 10,000 ft estimate (29)
Elevation: 2,500 ft (29)
Local relief: under 1,000 ft; mountains nearby to the west
and hills to the east (23:317; 29)
Local veg: shrubs, cactus, grasses; desert tendency
(15; 23:319)
Nearby large cities: Tabuk, pop. 75,000, 40 miles southeast
(23:I-23; 29)

6. TABUK (King Faisal AB)

Location: 28°22'N 36°38'E (37:B256)
Users: military (37:B256)
Pavement: asphalt (37:B256)
No. runways: 2 (8)
Runway length: 11,000 ft (37:B256)
Elevation: 2,539 ft (37:B256)
Local relief: under 500 ft; mountains to the south and east
(23:317; 29)
Local veg: shrubs, cactus, grasses; desert tendency
(15; 23:319)
Nearby large cities: Tabuk, pop. 75,000, 6 miles west
(23:I-23; 29)

TABLE 6.3 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone A

7. WADI AL MUSAYR

Location: 28°09'N 34°59'E (11)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: over 4,000 ft (8)
Elevation: 75 ft (11)
Local relief: under 500 ft; mountains nearby to the north
and east; Red Sea to the south (23:317; 29)
Local veg: Mediterranean tendency; shrubs, grasses
(15; 23:319)
Nearby large cities: none (23:I-23; 29)

8. WEJH

Location: 26°12'N 36°29'E (37:B286)
Users: civilian (37:B286)
Pavement: asphalt (37:B286)
No. runways: 1 (8)
Runway length: 10,000 ft (37:B286)
Elevation: 66 ft (37:B286)
Local relief: under 1,000 ft; mountains 30 miles east,
airfield located on Red Sea coastline (23:317; 29)
Local veg: Mediterranean tendency; shrubs, grasses
(15; 23:319)
Nearby large cities: none. Wejh (town) 3 miles north
(23:I-23; 29)

9. UM LEJJ

Location: 25°04'N 37°17'E (29)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,000 ft (29)
Elevation: 50 ft (29)
Local relief: under 1,000 ft; mountains 10 miles east; Red
Sea shoreline 3 miles west (23:317; 29)
Local veg: shrubs, cactus, grasses (15; 23:319)
Nearby large cities: none. Umm Lejj (town) 5 miles south
(23:I-23; 29)

TABLE 6.3 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone A

10. MADINAH

Location: 24°33'N 39°42'E (37:B168)
Users: civilian (37:B168)
Pavement: asphalt (37:B168)
No. runways: 2 (8)
Runway length: 10,000 ft (37:B168)
Elevation: 2,124 ft (37:B168)
Local relief: 1,000-5,000 ft New:317; 29)
Local veg: shrubs, cactus, grasses; desert tendency
(15; 23:319)
Nearby large cities: Medina, pop. 198,000, 10 miles southwest
(23:I-23; 29). Note: Medina is off limits to
non-Moslems (19:15).

11. YENBO

Location: 24°09'N 38°04'E (37:B293)
Users: civilian (37:B293)
Pavement: asphalt (37:B293)
No. runways: 1 (8)
Runway length: 10,500 ft (37:B293)
Elevation: 23 ft (37:B293)
Local relief: under 1,000 ft; mountains to north and east;
Red Sea coastline 10 miles east (23:317; 29)
Local veg: shrubs, cactus, grasses (15; 23:319)
Nearby large cities: none. Yenbo (town) 6 miles southwest
(23:I-23; 29)

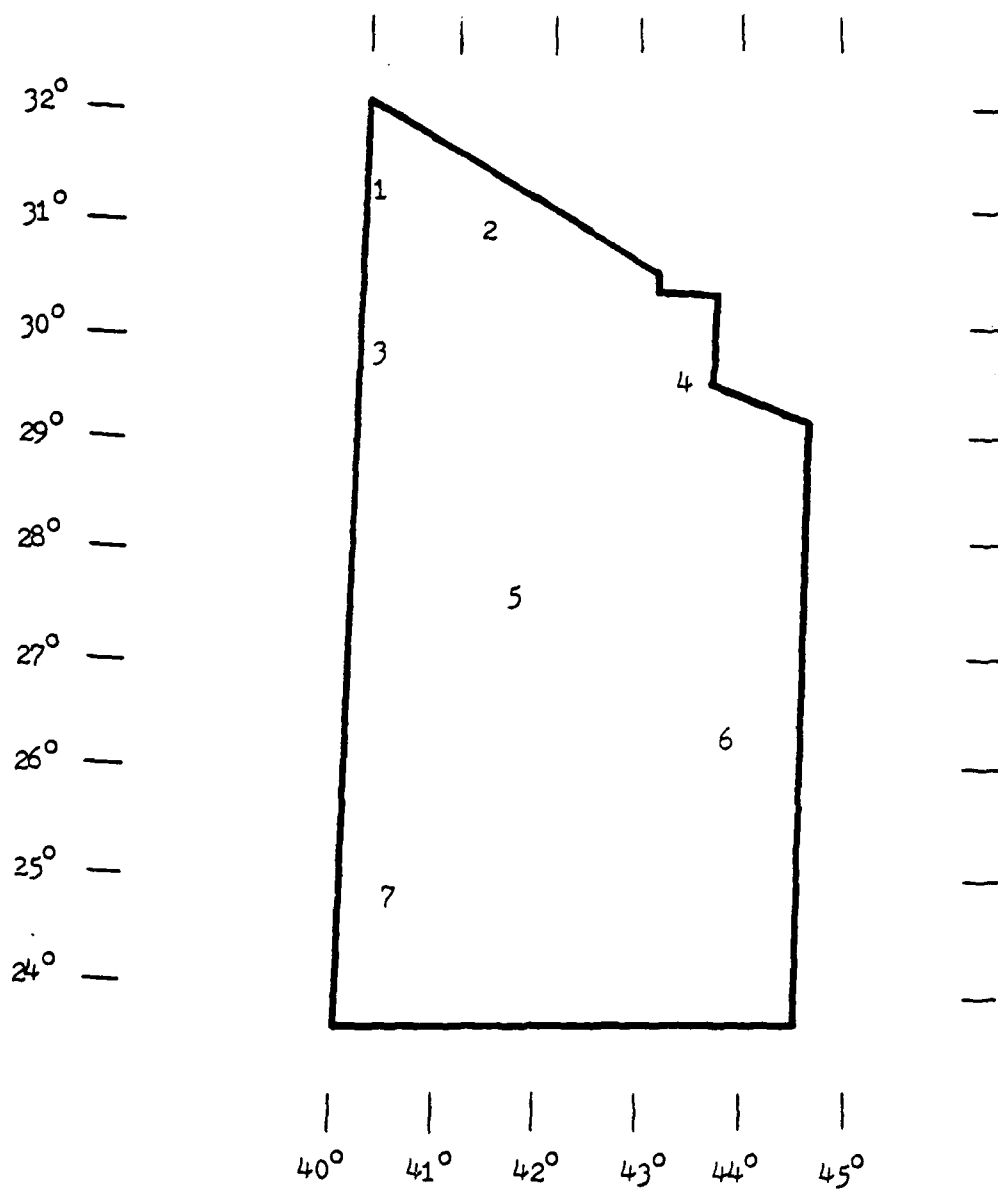


FIGURE 6.4
Airfields in SAUDI ARABIA, Zone B

TABLE 6.4

Airfield Summary List for SAUDI ARABIA, Zone B

1. JALAMID

Location: 31°17'N 40°05'E (29)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,400 ft (29)
 Elevation: 3,090 ft (29)
 Local relief: hills; local relief less than 1,000 ft
 (23: 317; 29)
 Local veg: shrubs, cactus, grasses; desert tendency
 (15; Niw:319)
 Nearby large cities: none. (23:I-23; 29)

2. ARAR

Location: 30°55'N 41°09'E (37:B16)
 Users: civilian (37:B16)
 Pavement: asphalt (37:B16)
 No. runways: 1 (8)
 Runway length: 10,000 ft (37:B16)
 Elevation: 1,821 ft (37:B16)
 Local relief: hills; local relief less than 500 ft
 (23:317; 29)
 Local veg: shrubs, cactus, grasses: desert tendency
 (15; 23:319)
 Nearby large cities: none. Arar (town) 1 mile south
 (23:I-23; 29)

3. AL JOUF

Location: 29°48'N 40°5'E
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 10,000 ft (29)
 Elevation: 2,200 ft (29)
 Local relief: some hills; local relief under 500 ft
 (23:317; 29)
 Local veg: shrubs, cactus, grasses, or barren (15; 23:319)
 Nearby large cities: none. Sakakah (town) 15 miles northeast
 (23:I23; 29)

TABLE 6.4 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone B

4. RAFHA

Location: 29°38'N 43°29'E (37:B216)
 Users: private (37:B216)
 Pavement: asphalt (37:B216)
 No. runways: 1 (8)
 Runway length: 7,000 ft (37:B216)
 Elevation: 1,473 ft (37:B216)
 Local relief: 100-300 ft; irregular plains; numerous small mounds (23:317; 30)
 Local veg: brief life cycle vegetation; desert (15; 23:319)
 Nearby large cities: none (23:I-23; 30)

5. HAIL

Location: 27°27'N 41°42'E (37:B111)
 Users: civilian (37:B111)
 Pavement: asphalt (37:B111)
 No. runways: 1 (8)
 Runway length: 10,800 ft (37:B111)
 Elevation: 3,331 ft (37:B111)
 Local relief: 100-300 ft; hills nearby to the west (23:317; 30)
 Local veg: shrubs, cactus, grasses; desert (15; 23:319)
 Nearby large cities: Hail, pop. 40,000, 6 miles north (23:I-23; 30)

6. GASSIM

Location: 26°18'N 43°46'E (37:B98)
 Users: civilian (37:B98)
 Pavement: asphalt (37:B98)
 No. runways: 1 (8)
 Runway length: 9,800 ft (37:B98)
 Elevation: 2,126 ft (37:B98)
 Local relief: 100-300 ft (23:317; 30)
 Local veg: shrubs, cactus, grasses, or barren; desert tendency, occasional tree growth (15; 23:319; 30)
 Nearby large cities: Buraydah, pop. 70,000, 15 miles east (23:I-23; 30)

TABLE 6.4 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone B

7. AL HANAKIYAH

Location: 24°53'N 40°30'E (29)

Users: no data

Pavement: no data

No. runways: 1 (8)

Elevation: 2,723 ft (29)

Local relief: mountain studded plains, most slopes gentle;
local relief over 1,000 ft (23:317; 29)

Local veg: shrubs, cactus, grasses; desert (15; 23:319)

Nearby large cities: Medina, pop. 198,000, 60 miles southwest
(23:I-23; 29). Note: Medina is off limits to
non-Moslems (19:15)

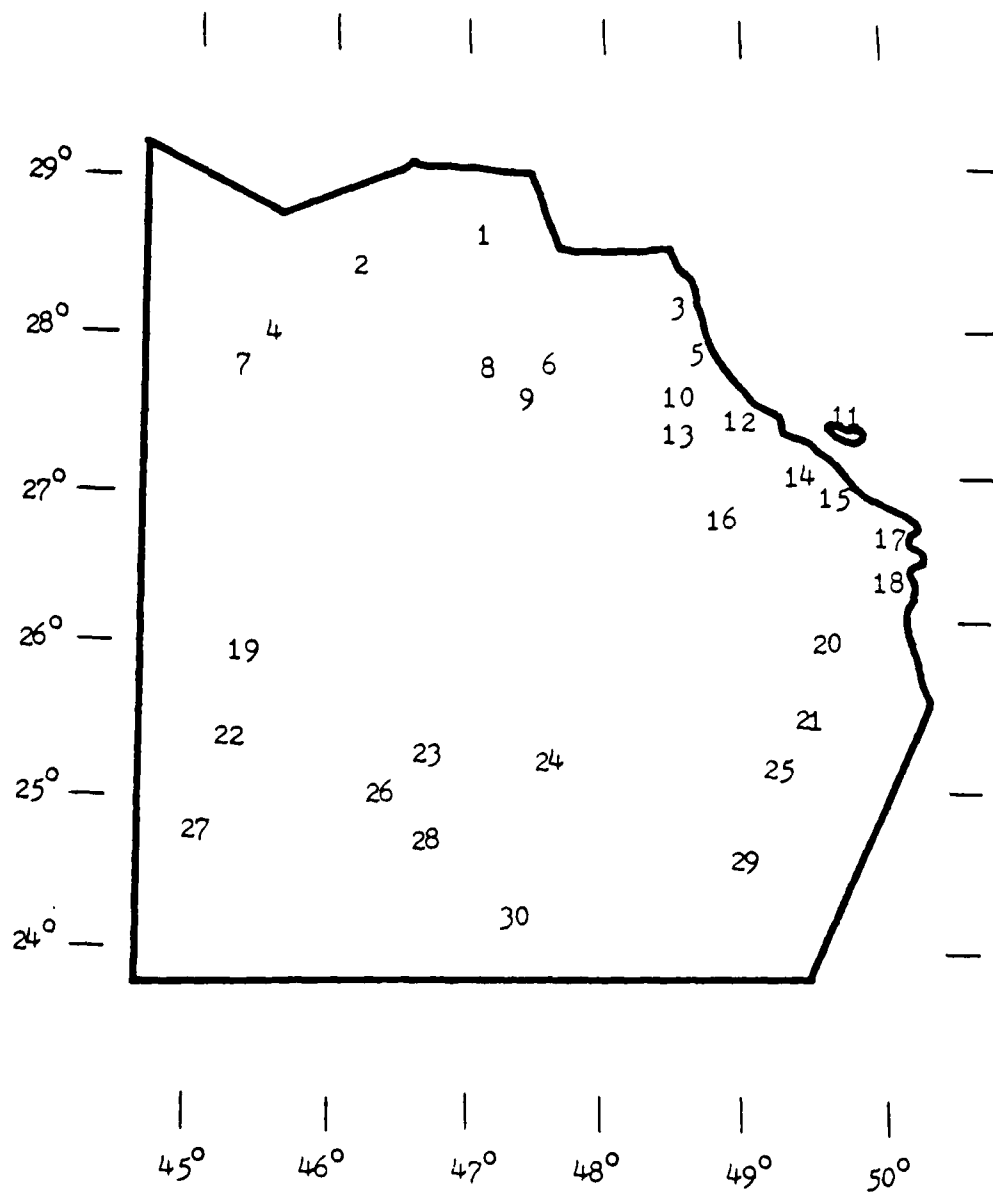


FIGURE 6.5
Airfields in SAUDI ARABIA, Zone C

TABLE 6.5

Airfield Summary List for SAUDI ARABIA, Zone C

1. AL MUSANNAH SOUTHEAST

Location: 28°30'N 47°02'E (8)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: over 4,000 ft (8)
 Elevation: 950 ft estimate (11)
 Local relief: gravel plain; 100-300 ft (23:317; 30)
 Local veg: brief life cycle vegetation; desert (15; 23:319)
 Nearby large cities: Kuwait, pop. 780,000, 60 miles northeast
 (23:I-21; 30). Note: Saudi Arabian - Kuwait
 international border is 30 miles north (30)

2. QAISUMAH

Location: 28°20'N 46°08'E (37:B215)
 Users: civilian (37:B215)
 Pavement: asphalt (37:B215)
 No. runways: 1 (8)
 Elevation: 1,174 ft (37:B215)
 Local relief: 100-300 ft; sand and gravel plain (23:317; 30)
 Local veg: Shrubs, cactus, grasses; desert (15; 23:319)
 Nearby large cities: none. Hafar Al Batin (town) 10 miles
 northwest (23:I-23; 30)

3. RAS AL MISHAB

Location: 28°06'N 48°36'E (30)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,000 ft (30)
 Elevation: 108 ft (11)
 Local relief: sand plains; under 100 ft; Red Sea 1 mile east
 (23:317; 30)
 Local veg: shrubs, cactus, grasses; desert; brackish swamps
 (15; 23:319)
 Nearby large cities: Kuwait, pop. 780,000, 80 miles north
 (23:I-21; 30) Note: Saudi Arabian - Kuwait
 international border is 30 miles north (30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

4. HAFR AL-BATIN

Location: 27°57'N 45°33'E (37:B110)
Users: civilian (37:B110)
Pavement: asphalt (37:B110)
No. runways: 1 (11)
Runway length: 7,100 ft (37:B110)
Elevation: 1,340 ft (37:B110)
Local relief: 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: none. Hafr Al-Batin (town) 40 miles
northeast (23:I-23; 30)

5. TANAJIB

Location: 27°52'N 48°45'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 100 ft estimate
Local relief: sand plains; under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Kuwait, pop. 780,000, 100 miles north
(23:I-21; 30). Note: Saudi Arabian - Kuwait
international border is 30 miles north (30)

6. AL WARIAH

Location: 27°50'N 47°26'E (30)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 4,400 ft (30)
Elevation: 850 ft (30)
Local relief: 100-300 ft; gravel plain (23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: none (23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

7. KING KHALID MILITARY CITY

Location: 27°48'N 45°30'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 1,320 ft (11)
Local relief: 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: none. Hafr Al-Batin (town) 40 miles
northeast (23:I-23; 30)

8. AL WADIA

Location: 27°47'N 47°04'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 1,000 ft estimate (30)
Local relief: 100-300 ft; some land areas subject to flooding
(23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: none (23:I-23; 30)

9. WABRAH

Location: 27°32'N 47°24'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 1,000 ft estimate (10)
Local relief: 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: none (23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

10. NARIYA

Location: 27°29'N 48°28'E (37:B188)
Users: civilian (37:B188)
Pavement: gravel (37:B188)
No. runways: 2 (8)
Runway length: 5,200 ft (37:B188)
Elevation: 180 ft (37:B188)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: none (23:I-23; 30)

11. ABU ALI

Location: 27°19'N 49°35'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,200 ft (30)
Elevation: 49 ft (30)
Local relief: under 100 ft; airfield located on sand spit
connected to mainland by a causeway (23:317; 30)
Local veg: shrubs, cactus, grasses; desert; occasional
flooding (15; 30)
Nearby large cities: Ad Dammam, pop. 128,000, 80 miles south
(23:I-23; 30)

12. ABU HADRIYA SOUTHWEST

Location: 27°18'N 48°58'E (30)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 5,000 ft (30)
Elevation: 79 ft (30)
Local relief: sand plains; under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Ad Dammam, pop. 128,000, 90 miles
southeast (23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

13. NITA

Location: 27°15'N 48°30'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 150 ft estimate (11)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: none (23:I-23; 30)

14. JUBAIL

Location: 27°03'N 49°24'E (37:B129)
Users: civilian (37:B129)
Pavement: asphalt (37:B129)
No. runways: 1 (8)
Runway length: 13,100 ft (37:B129)
Elevation: 25 ft (37:B129)
Local relief: sand dunes; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Ad Dammam, pop. 128,000, 80 miles
southeast (23:I-23; 30)

15. JUBAIL NAS

Location: 26°58'N 49°42'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 20 ft estimate (11)
Local relief: under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Ad Dammam, pop. 128,000, 50 miles
southeast (23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

16. URJUN

Location: 26°46'N 48°45'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 100 ft estimate (11)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Ad Dammam, pop. 128,000, 90 miles east
(23:I-23; 30)

17. RAS TANURA

Location: 26°45'N 49°48'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 6 ft (11)
Local relief: under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert; occasional
flooding (15; 30)
Nearby large cities: Ad Dammam, pop. 128,000, 30 miles south
(23:I-23; 30)

18. DHAHRAN INTERNATIONAL (King Abdul Aziz AB)

Location: 26°16'N 50°10'E (37:B73)
Users: Royal Saudi Air Force, civilian (37:B73)
Pavement: asphalt (37:B73)
No. runways: 2 (8)
Runway length: 12,000 ft (37:B73)
Elevation: 84 ft (37:B73)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Ad Dammam, pop. 128,000, 10 miles north
(23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

19. MAJMA

Location: 25°55'N 45°23'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,000 ft (30)
Elevation: 2,378 ft (30)
Local relief: under 500 ft; hill studded plains
(23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: Riyadh, pop. 667,000, 100 miles
southeast (23:I-23; 30)

20. ABQAIQ

Location: 25°55'N 49°36'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,000 ft estimate (30)
Elevation: 300 ft (11)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Al Hufuf (Hofuf), pop. 101,000, 40 miles
south (23:I-23; 30)

21. ALHASA

Location: 25°25'N 49°28'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 600 ft estimate (11)
Local relief: sand plains and sand dunes; 100-300 ft
(23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Al Hufuf (Hofuf), pop. 101,000, 10 miles
(15; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

22. ASH SHAQRA

Location: 25°18'N 45°15'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,400 ft (30)
Elevation: 2,300 ft (30)
Local relief: under 500 ft; hill studded plains
(23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: Riyadh, pop. 667,000, 90 miles southeast
(23:I-23; 30)

23. THUMAMA

Location: 25°14'N 46°37'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 2,000 ft estimate (11)
Local relief: 100-300 ft; sand and gravel plains
(23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: Riyadh, pop. 667,000, 40 miles south
(23:I-23; 30)

24. PETROLINE 3

Location: 25°11'N 47°30'E (8)
Users: no data
Pavement: no data
No runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 2,400 ft estimate (11)
Local relief: sand dunes or rocky plains; 100-300 ft
(23:317; 30)
Local veg: Brief life cycle vegetation or barren; desert
(15)
Nearby large cities: Riyadh, pop. 667,000, 60 miles southwest
(23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

25. AL UDAYLIYAH

Location: 25°09'N 49°20'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 800 ft (11)
Local relief: sand plains and sand dunes; 100-300 ft
(23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Al Hufuf (Hofuf), pop. 101,000, 25 miles
northeast (23:I-23; 30)

26. KING ABDUL

Location: 24°59'N 46°22'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ;ft (8)
Elevation: 2,000 ft estimate (11)
Local relief: under 500 ft; hill studded plains
(23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 23:319)
Nearby large cities: Rihadh, pop. 667,000, 30 miles southeast
(23:I-23; 30)

27. PETROLINE 6

Location: 24°43'N 44°57'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 2,500 ft estimate (8)
Local relief: sand and gravel plains; sand dunes; 100-300 ft
(23:317; 30)
Local veg: brief life cycle vegetation or barren; desert
(15; 23:319)
Nearby large cities: none (23:I-23; 30)

TABLE 6.5 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone C

28. RIYADH

Location: 24°43'N 46°44'E (37:B222)
 Users: civilian (37:B222)
 Pavement: asphalt (37:B222)
 No. runways: 2 (8)
 Runway length: 13,400 ft (37:B222)
 Elevation: 2,124 ft (37:B222)
 Local relief: under 1,000 ft; hills to the south and east
 (23:317; 30)
 Local veg: shrubs, cactus, grasses, or barren; desert
 (15; 23:319)
 Nearby large cities: Rihadh, pop. 667,000, 2 miles south
 (23:I-23; 30)

29. HAWIYAH

Location: 24°29'N 48°59'E (11)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: over 4,000 ft (8)
 Elevation: 1,200 ft estimate (11)
 Local relief: rocky plain; 100-300 ft (23:317; 30)
 Local veg: shrubs, cactus, grasses, or barren; desert
 (15; 23:319)
 Nearby large cities: Al Hufuf (Hofuf), pop. 101,000, 60 miles
 northeast (23:I-23; 30)

30. AL KHARJ

Location: 24°03'N 47°25'E (30)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 11,000 ft estimate (30)
 Elevation: 1,400 ft (30)
 Local relief: gravel plains; 100-300 ft (23:317; 30)
 Local veg: brief life cycle vegetation or barren; occasional
 tree growth (15; 30)
 Nearby large cities: As Sulaymaniyah, unknown population,
 10 miles north; Riyadh, pop. 667,000, 50 miles northwest
 (23:I-23; 30)

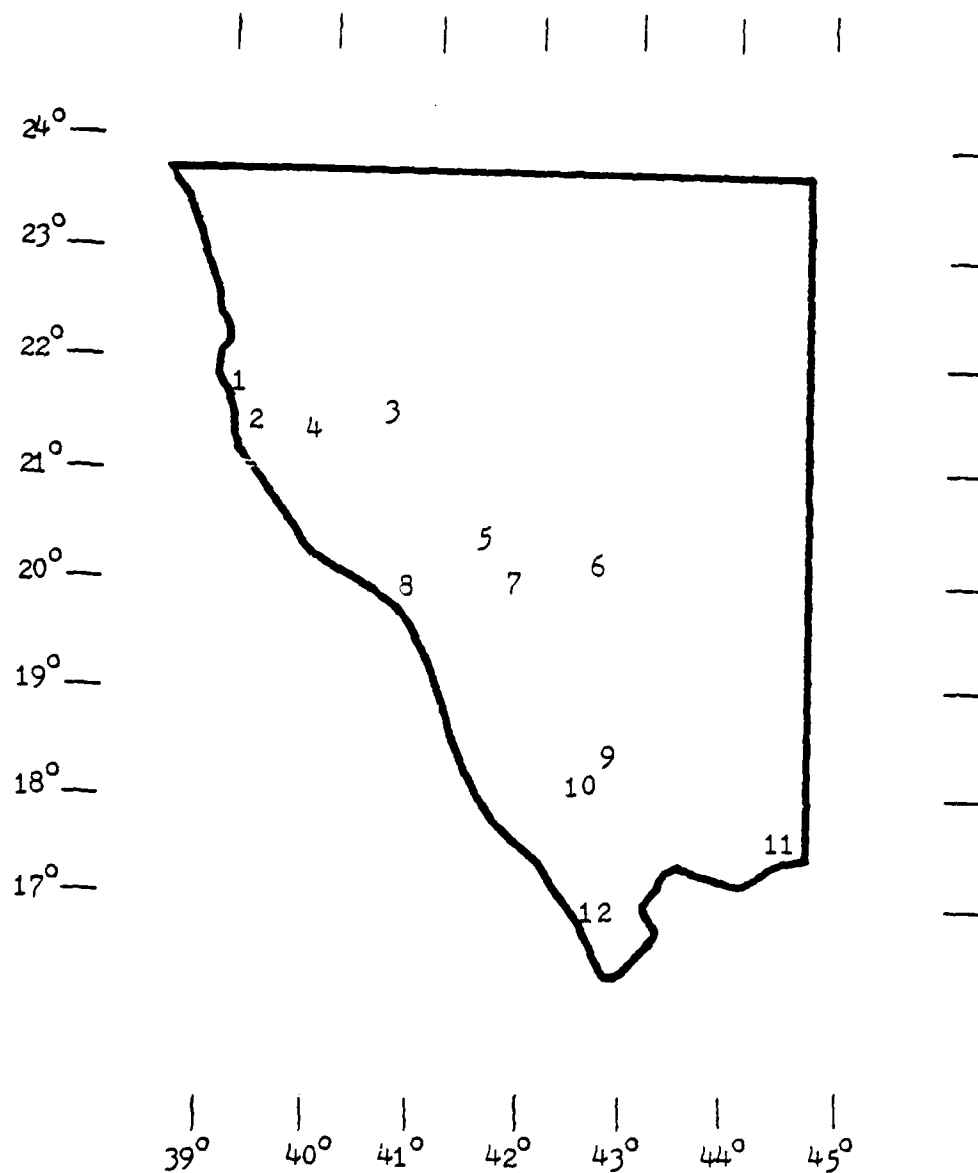


FIGURE 6.6
Airfields in SAUDI ARABIA, Zone D

TABLE 6.6

Airfield Summary List for SAUDI ARABIA, Zone D

1. KING ABDUL AZIZ INTERNATIONAL (Jeddah New)

Location: 21°41'N 39°09'E (37:B138)
 Users: Royal Saudi Air Force, civilian (37:B138)
 Pavement: concrete (37:B138)
 No. runways: 2 (8)
 Runway length: 12,400 ft (37:B138)
 Elevation: 47 ft (37:B138)
 Local relief: over 500 ft; mountains to east; Red Sea 5 miles
 (23:317; 33)
 Local veg: Mediterranean tendency; shrubs, grasses
 (15; 33)
 Nearby large cities: Jeddah, pop. 561,000, 10 miles south
 (23:I-23; 33)

2. JEDDAH INTERNATIONAL

Location: 21°30'N 39°12'E (37:B126)
 Users: civilian (37:B126)
 Pavement: concrete (37:B126)
 No. runways: 2 (8)
 Runway length: 10,500 ft (37:B126)
 Elevation: 69 ft (37:B126)
 Local relief: over 500 ft; mountains to east; Red Sea 5 miles
 west (23:317; 33)
 Local veg: Mediterranean tendency; shrubs, grasses
 (15; 33)
 Nearby large cities: Jeddah, pop. 561,000, 1 mile west
 (23:I-23; 33)

3. TAIF (Crown Prince Fahd AB; Mecca East)

Location: 21°29'N 40°33'E (37:B257)
 Users: Royal Saudi Air Force, civilian (37:B257)
 Pavement: asphalt (37:B257)
 No. runways: 2 (8)
 Runway length: 2,200 ft (37:B257)
 Elevation: 4,846 ft (37:B257)
 Local relief: over 1,000 ft; mountains 20 miles west
 (23:317; 33)
 Local veg: grasses, shrubs, or barren; local cultivation
 (15; 33)
 Nearby large cities: At Taif, pop. 205,000, 20 miles south
 (23:I-23; 33)

TABLE 6.6 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone D

4. MECCA

Location: 21°27'N 39°59'E (33)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,900 ft (33)
Elevation: 1,150 ft (33)
Local relief: over 5,000 ft (23:317; 33)
Local veg: shrubs and grasses; desert tendency (15; 23:319)
Nearby large cities: Mecca, pop. 367,000, 10 miles west
(23:I-23; 33). Note: Mecca is off limits to
non-Moslems (19:15)

5. BAHA (Aqia)

Location: 20°18'N 41°38'E (37:B23)
Users: civilian (37:B23)
Pavement: asphalt (37:B23)
No. runways: 1 (8)
Runway length: 11,000 ft (37:B23)
Elevation: 5,486 ft (37:B23)
Local relief: over 1,000 ft (23:317; 33)
Local veg: shrubs, cactus, grasses; desert tendency (15)
Nearby large cities: none (23:I-23; 33)

6. BISHA

Location: 19°59'N 42°37'E (37:B38)
Users: civilian (37:B38)
Pavement: asphalt (37:B38)
No. runways: 1 (8)
Runway length: 10,000 ft (37:B38)
Elevation: 3829 ft (37:B38)
Local relief: under 1,000 ft (23:317; 33)
Local veg: shrubs and grasses, or barren; occasional trees
(15; 33)
Nearby large cities: none. Bisha (town), 2 miles north
(23:I-23; 33)

TABLE 6.6 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone D

7. JIDHANAH

Location: 19°54'N 41°56'E (33)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,000 ft (33)
Elevation: 6,570 ft (33)
Local relief: over 1,000 ft (23:317; 33)
Local veg: grasses, shrubby trees, thickets; many areas
barren (15)
Nearby large cities: none (23:I-23; 33)

8. MUSSALYN

Location: 19°45'N 40°52'E (33)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 225 ft (33)
Local relief: over 1,000 ft; mountains 10 miles east; Red Sea
5 miles west (23:317; 33)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none (23:I-23; 33)

9. KHAMIS MUSHAIT (King Khalid Air Base)

Location: 18°19'N 42°49'E (37:B136)
Users: military (37:B136)
Pavement: asphalt (37:B136)
No. runways: 2 (8)
Runway length: 12,400 ft (37:B136)
Elevation: 6,778 ft (37:B136)
Local relief: over 1,000 ft; mountains nearby to west
(23:317; 33)
Local veg: shrubs and bushes; grassland; tropical tendency
(15; 23:319)
Nearby large cities: Khamis Mushait, pop. 50,000, 5 miles
west (23:I-23; 33)

TABLE 6.6 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone D

10. ABHA

Location: 18°14'N 42°39'E (37:B2)
 Users: civilian (37:B2)
 Pavement: asphalt (37:B2)
 No. runways: 1 (8)
 Runway length: 10,000 ft (37:B2)
 Elevation: 6857 ft (37:B2)
 Local relief: over 1,000 ft; mountains nearby to the west
 (23:317; 33)
 Local veg: Woodlands and grasses; tropical tendency
 (15; 23:319)
 Nearby large cities: Khamis Mushayt, pop. 50,000, 5 miles
 northeast (23:I-23; 33)

11. NEJRAN

Location: 17°37'N 44°26'E (37:B189)
 Users: military (37:B189)
 Pavement: asphalt (37:B189)
 No. runways: 1 (8)
 Runway length: 10,000 ft (37:B189)
 Elevation: 3,982 ft (37:B189)
 Local relief: over 1,000 ft (23:317; 33)
 Local veg: brief life cycle vegetation or barren; scattered
 cultivated areas (15; 33)
 Nearby large cities: Nejran, pop. 47,000, 20 miles southwest
 (23:I-23; 33)

12. GIZAN

Location: 16°54'N 42°35'E (37:B103)
 Users: military (37:B103)
 Pavement: asphalt (37:B103)
 No. runways: 1 (8)
 Runway length: 10,000 ft (37:B103)
 Elevation: 20 ft (37:B103)
 Local relief: over 1,000 feet; relatively level around
 airfield; mountains 25 miles east (23:317; 33)
 Local veg: shrubs, cactus, grasses; tropical tendency; local
 cultivation (15; 33)
 Nearby large cities: none. Qizan (town), 3 miles west
 (23:I-23; 33)

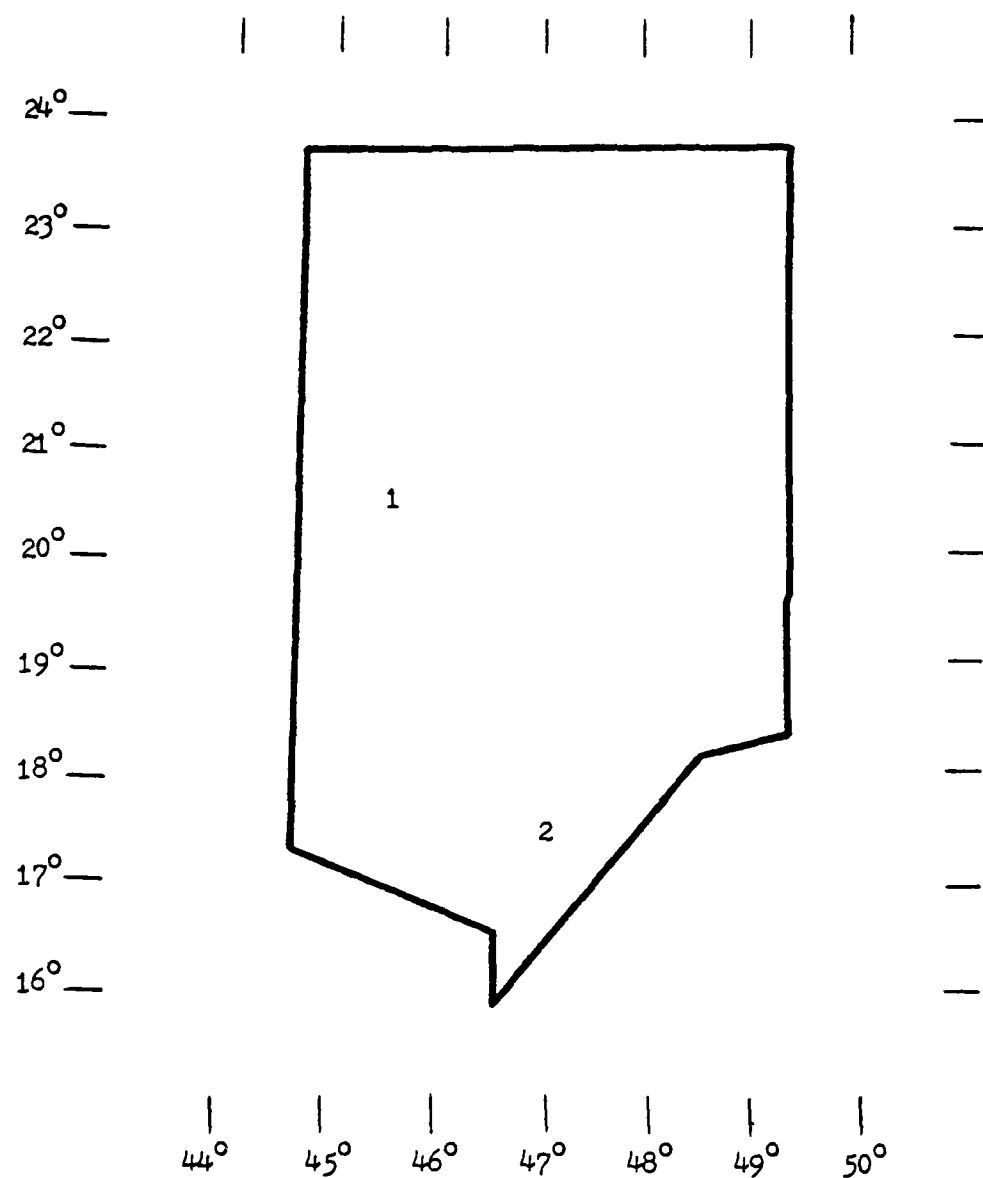


FIGURE 6.7
Airfields in SAUDI ARABIA, Zone E

TABLE 6.7

Airfield Summary List for SAUDI ARABIA, Zone E

1. SULAYEL

Location: 20°28'N 45°36'E (37:B254)
Users: civilian (37:B254)
Pavement: asphalt (37:B254)
No. runways: 1 (8)
Runway length: 9,900 ft (37:B254)
Elevation: 2,022 ft (37:B254)
Local relief: rocky, hill studded plains; 300-1000 ft
(23:317; 33)
Local veg: shrubs, cactus, grasses; desert tendency;
occasional trees (15; 33)
Nearby large cities: none (23:I-23; 33)

2. SHARURAH

Location: 17°25'N 47°06'E (37:B242)
Users: military (37:B242)
Pavement: asphalt (37:B242)
No. runways: 1 (8)
Runway length: 11,800 ft (37:B242)
Elevation: 2,363 ft (37:B242)
Local relief: 100-300 ft; sand dunes (23:317; 33)
Local veg: shrubs, cactus, grasses, or barren; desert (15)
Nearby large cities: none (23:I-23; 33)

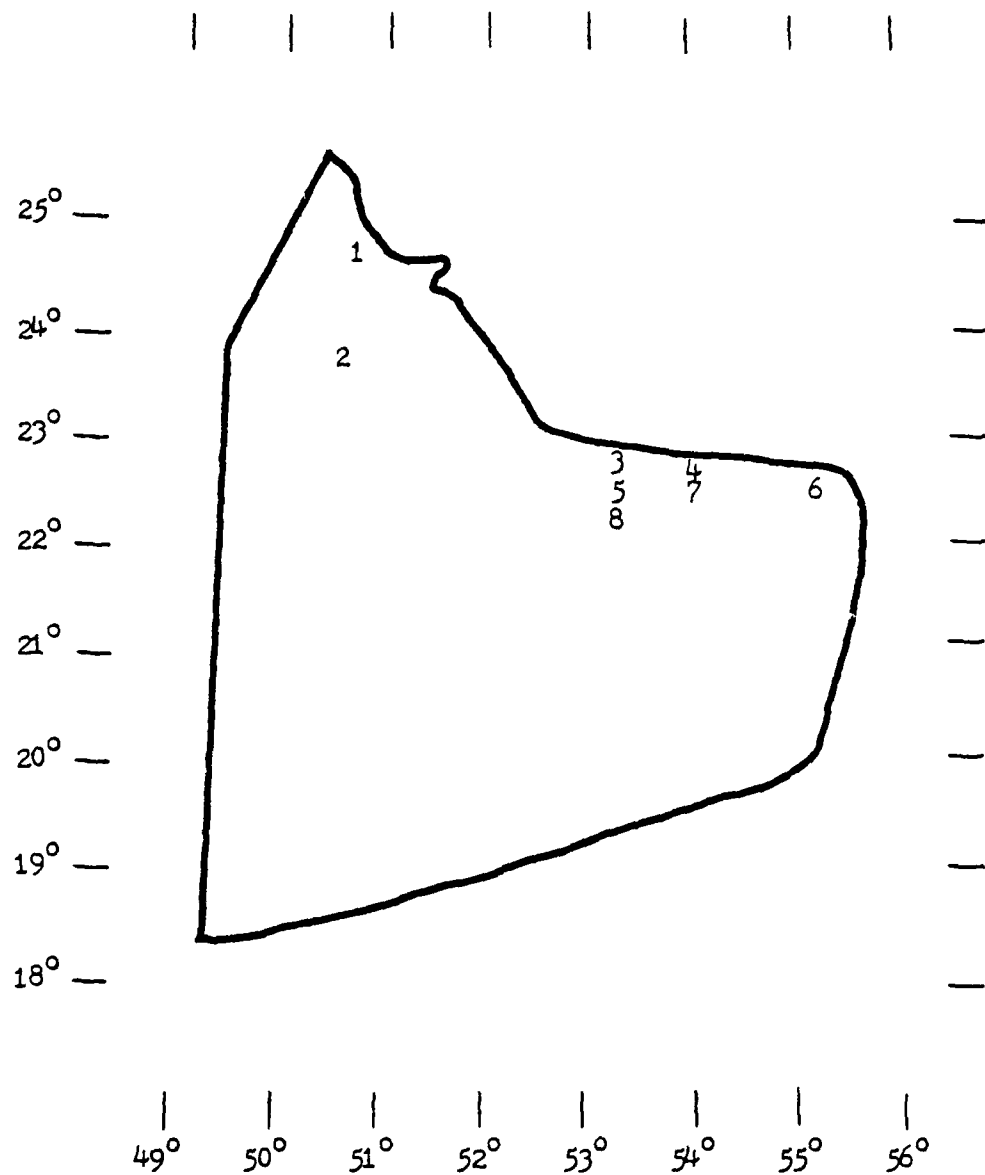


FIGURE 6.8
Airfields in SAUDI ARABIA, Zone F

TABLE 6.8

Airfield Summary List for SAUDI ARABIA, Zone F

1. UGTAH HIGHWAY STRIP

Location: 24°47'N 50°44'E (30)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 11,000 ft estimate (30)
Elevation: 50 ft (30)
Local relief: sand plains; 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert; occasional
flooding (15; 30)
Nearby large cities: Al Hufuf (Hofuf), pop. 101,000, 80 miles
northwest (23:I-23; 30)

2. LUGFAH

Location: 23°41'N 50°31'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 600 ft estimate (34)
Local relief: sand plains; 100-300 ft (23:317; 34)
Local veg: barren (15; 34)
Nearby large cities: none (23:I-23; 34)

3. KHALFAN

Location: 22°45'N 53°15'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 300 ft estimate (34)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation (15)
Nearby large cities: none (23:I-23; 34)

TABLE 6.8 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone F

4. ZARARAH NEW

Location: 22°41'N 53°59'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 300 ft (11)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation
(15; 34)
Nearby large cities: none (23:I-23; 34)

5. ZAMUL

Location: 22°36'N 55°11'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 300 ft estimate (34)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation
(15; 34)
Nearby large cities: none (23:I-23; 34)

6. SHAYBAH

Location: 22°32'N 53°15'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,000 ft (34)
Elevation: 300 ft (11)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation
(15; 34)
Nearby large cities: none (23:I-23; 34)

TABLE 6.8 (cont.)

Airfield Summary List for SAUDI ARABIA, Zone F

7. SHAYBAH F-27

Location: 22°30'N 53°59'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,200 ft (34)
Elevation: 300 ft (34)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation
(15; 34)
Nearby large cities: none (23:I-23; 34)

8. KIDAN

Location: 22°22'N 53°15'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 300 ft estimate (11)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert; brief life cycle vegetation
(15; 34)
Nearby large cities: none (23:I-23; 34)

CHAPTER VII
DEPLOYMENT LOCATION SPECIFIC INFORMATION:
YEMEN ARAB REPUBLIC

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about the Yemen Arab Republic. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about the Yemen Arab Republic. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, Yemen Arab Republic military rank and insignia, and other information. The last part of the chapter contains airfield summaries of nine Yemen Arab Republic airfields large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that generally applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 7.1 and the alphabetical airfield listing in Table 7.1. Mark the approximate airfield location on the map in Figure 7.1. Keeping this location in mind, read the entire narrative description of the Yemen Arab Republic, focusing on the information that applies more specifically to your deployment area.

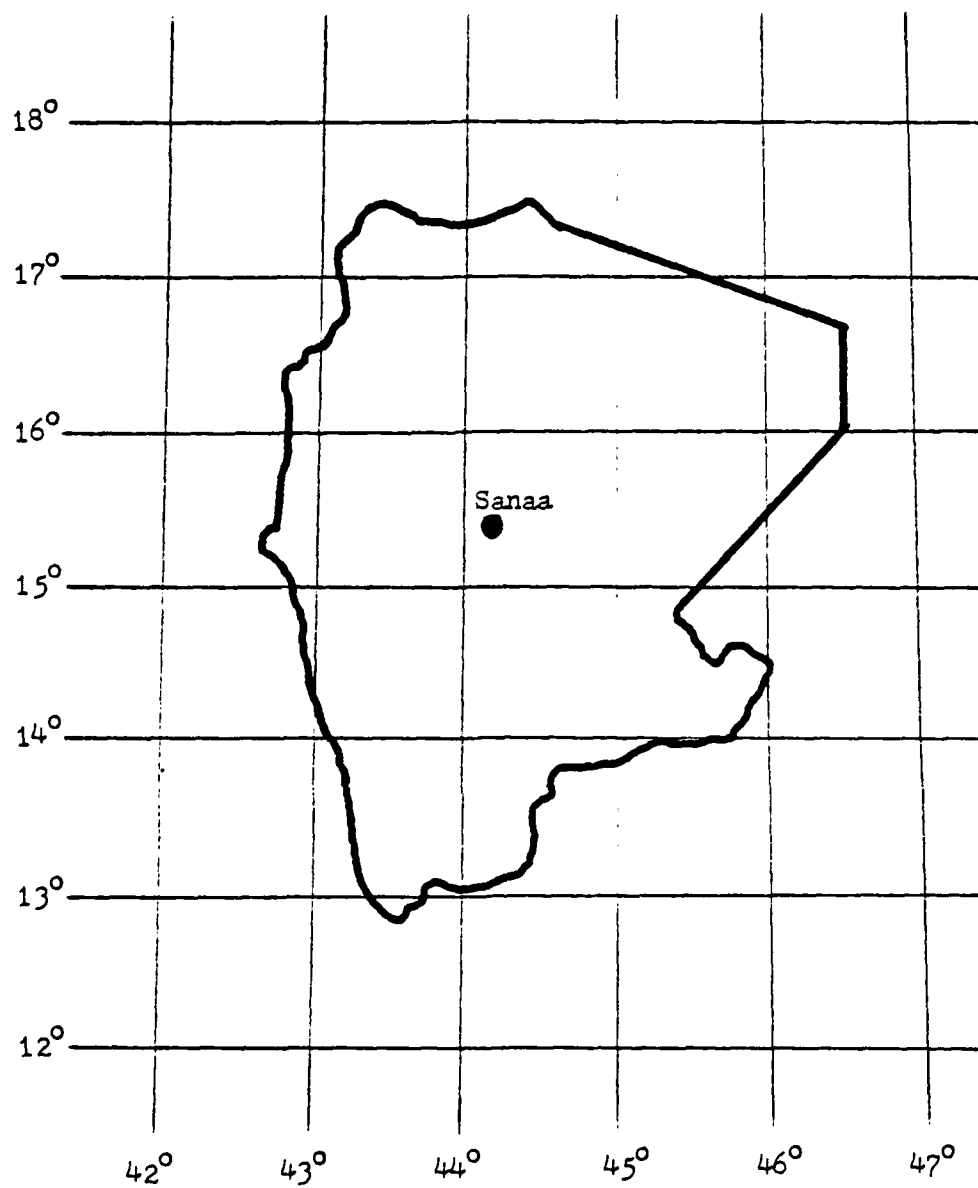


FIGURE 7.1

Map of the YEMEN ARAB REPUBLIC with Latitude and Longitude References

TABLE 7.1
 Alphabetical List of Airfields in the YEMEN ARAB REPUBLIC
 and their Coordinates

Airfield Name	Geographic Coordinates
Abbs	16°01'N 43°11'E
Al Bayda	14°06'N 45°26'E
Al Hazm	16°13'N 44°47'E
Hodeida (Al Hudaydah)	14°45'N 42°59'E
Marib	14°28'N 45°19'E
Sadah New	16°58'N 43°44'E
Sana South	15°20'N 44°12'E
Sanaa International (Rahaba)	15°29'N 44°13'E
Taizz Ganed	13°41'N 44°08'E

Demographic and Geographic Background: Yemen Arab Republic

Geography

The Yemen Arab Republic can be geographically divided into two regions: the narrow coastal plain along the Red Sea, and the mountainous interior (27:165).

Roads

The road system is generally underdeveloped, although Hodeida (ho-DADE-ah), Taizz (ta-IZ), and Sana (sah-NAH) are connected by hard surfaced roads. In 1976, there were 786 miles of hard surfaced roads (27:168).

Population, Sanitation, Health Hazards

Major cities in the Yemen Arab Republic are Sana, population 140,000; Hodeida, 85,000; and Taizz, 80,000 (45:263).

Malnutrition and a contaminated water supply are serious health problems among inhabitants (27:180). Although the Yemen Arab Republic contains the best area on the Arabian peninsula for vegetation and agriculture, a lack of knowledge about proper diet contributes to malnutrition (27:167;180). Since there are no sewer systems, groundwater absorbs sewage, resulting in frequent contamination of wells, especially in rural areas. Groundwater is the sole source of potable water in the country (27:180-181).

Religion and Culture

The Yemen Arab Republic is generally a traditional Muslim country. Alcohol is strictly forbidden, although some is allowed to foreigners (27:270). Depending on the location, segregation and veiling of women can be very strict. Segregation of the sexes is more evident among the wealthy city dwellers than among rural women because rural women have less opportunity for contact with men (27:85).

Climate

The coastal strip near the Red Sea has a tropical climate. In this area, there is little temperature variation between months, and the average annual rainfall is about 5 inches, which falls in irregular

downpours (27:167). Humidity is normally between 50 and 70 percent, and temperatures occasionally exceed 54°C (130°F) (27:167). The average temperatures in January are 28°C (82°F) for the high, and 23°C (74°F) for the low. For the six months from May through October, the average high temperature is 36°C (97°F) and 29°C (84°F) for the low (49:338).

Inland, the climate becomes less hot and dry with increasing altitude. The foothills average 15-20 inches of rainfall per year. The highlands may receive 35 inches of rain per year. In the highlands, summer temperatures average 21°C (70°F), and winter temperatures may fall below 4°C (40°F) (27:167). The highest mountains have snow and ice during winter (38:217).

Briefing Notes for the Yemen Arab Republic

Customs. No sexually suggestive material, and no alcohol (41:272).

Electric Supply. 220V AC 50 Hz; plugs are 2-pin (bayonet) (45:267).

Fixed Holidays. (Julian calendar) (45:268).

13 Jun Corrective Movement Anniversary

26 Sep Revolution Day

14 Oct People's Democratic Republic of Yemen
National Day

Local Time. Greenwich Mean Time plus 3 hours (4 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2000 hours in Sana, 2100 hours during daylight savings time (41:271).

Military Rank and Insignia. (27:234)

Colonel	Eagle and 2 stars
Lt Colonel	Eagle and 1 star
Major	Eagle
Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Native Produce. Wash native fruits and vegetables in disinfectant before eating (41:272).

Photos. No photos are allowed of women, military or industrial facilities, civil or military aerodromes, or port facilities (41:272).

Prohibited Items. Alcohol and raw cotton (45:267).

Water. Boil water obtained from native wells (41:272).

Weights and Measures. Metric system (see Appendix A) (45:268).

Airfield Summaries: Yemen Arab Republic

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about Yemen Arab Republic airfields over 4,000 feet long.

How to Use This Section

There are two ways to locate your airfield in this section:

1. If only an approximate deployment location is known, turn the page to Figure 7.2, Airfield Locations for the Yemen Arab Republic. Airfields are numbered consecutively from north to south. Determine the number of the airfield for your deployment location, then read the description of that airfield in Table 7.2.

2. If the airfield name is known, turn directly to the airfield summaries in Table 7.2, Airfield Summary List for the Yemen Arab Republic. Page through the summaries until you find your airfield.

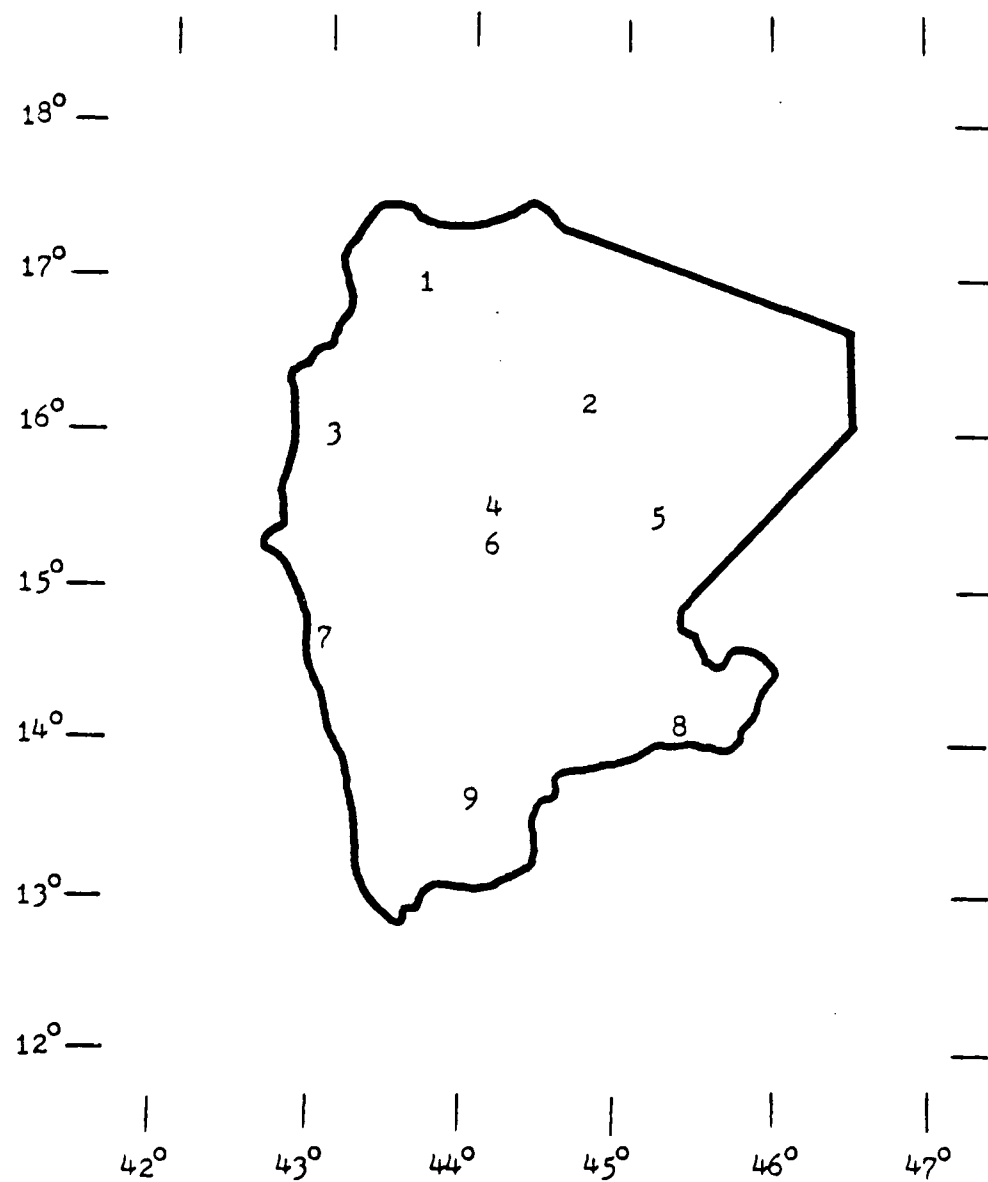


FIGURE 7.2

Airfield Locations for the YEMEN ARAB REPUBLIC

TABLE 7.2

Airfield Summary List for the YEMEN ARAB REPUBLIC

1. SADAH NEW

Location: 16°58'N 43°44'E (33)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 12,000 ft estimate (33)
 Elevation: 5,940 ft (33)
 Local relief: over 3,000 ft; fairly level near airfield (33)
 Local veg: shrubs, cactus, grasses; tropical tendency (15)
 Nearby large cities: none (23:I-27; 33)

2. AL HAZM

Location: 16°13'N 44°47'E (33)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 5,000 ft (33)
 Elevation: 3,610 ft (33)
 Local relief: over 5,000 ft; fairly level near airfield (33)
 Local veg: grasses and shrubs; tropical tendency (15)
 Nearby large cities: none (23:I-27; 36; 33)

3. ABBS

Location: 16°01'N 43°11'E (36)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 6,100 ft (36)
 Elevation: 651 ft (36)
 Local relief: over 5,000 ft; fairly level near airfield;
 mountains rise steeply to the east (36)
 Local veg: shrubs and grasses; tropical tendency (15)
 Nearby large cities: Al Hudaydah, pop. 80,000, 80 miles south
 (23:I-27; 36)

TABLE 7.2 (cont.)

Airfield Summary List for the YEMEN ARAB REPUBLIC

4. SANAA INTERNATIONAL (Rahaba)

Location: 15°29'N 44°13'E (37:B233)
Users: military and civilian (37:B233)
Pavement: asphalt (37:B233)
No. runways: 1 (8)
Runway length: 10,600 ft (37:B233)
Elevation: 7,237 ft (37:B233)
Local relief: over 3,000 ft (36)
Local veg: grasses, shrubby trees, thickets; tropical
tendency (15; New:319)
Nearby large cities: Sanaa, pop. 135,000, 10 miles south
(23:I-27; 36)

5. MARIB

Location: 15°28'N 45°19'E (36)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 6,900 ft (36)
Elevation: 3,300 ft (36)
Local relief: over 2,000 ft to the west; under 300 ft to the
east (23:317; 36)
Local veg: shrubs, cactus, grasses, sand (15; 36)
Nearby large cities: Sanaa, pop. 135,000, 90 miles west
(23:I-27)

6. SANA SOUTH

Location: 15°20'N 44°12'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,000 ft (36)
Elevation: 7,490 ft (36)
Local relief: over 4,000 ft (36)
Local veg: grasses, shrubby trees, thickets; tropical
tendency (15; New:319)
Nearby large cities: Sanaa, pop. 135,000, 2 miles north
(23:I-27; 36)

TABLE 7.2 (cont.)

Airfield Summary List for the YEMEN ARAB REPUBLIC

7. HODEIDA (Al Hudaydah)

Location: 14°45'N 42°59'E (37:B118)
Users: military and civilian (37:B118)
Pavement: asphalt (37:B118)
No. runways: 1 (8)
Runway length: 9,800 ft (37:B118)
Elevation: 41 ft (37:B118)
Local relief: under 500 ft; Red Sea 1 mile west; mountains
30 miles east (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: Al Hudaydah, pop. 80,000, 3 miles north
(23:I-27; 36)

8. AL BAYDA

Location: 14°06'N 45°26'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,000 ft estimate (36)
Elevation: 6,000 ft (36)
Local relief: over 1,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Al Bayda (town) 10 miles
southeast (36)

9. TAIZZ GANED

Location: 13°41'N 44°08'E (37:B257)
Users: military and civilian (37:B257)
Pavement: asphalt (37:B257)
No. runways: 2 (8)
Runway length: 9,800 ft (37:B257)
Elevation: 4,600 ft (37:B257)
Local relief: over 5,000 ft (36)
Local veg: shrubs, trees, grasses, thickets; tropical
tendency (15; 23:319)
Nearby large cities: Taizz, pop. 79,000, 10 miles southwest
(23:I-27; 36)

CHAPTER VIII
DEPLOYMENT LOCATION SPECIFIC INFORMATION:
PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about the People's Democratic Republic of Yemen. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about the People's Democratic Republic of Yemen. The last part of the chapter contains airfield summaries of 31 People's Democratic Republic of Yemen airfields large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that generally applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 8.1 and the alphabetical airfield listing in Table 8.1. Mark the approximate airfield location on the map in Figure 8.1. Keeping this location in mind, read the entire narrative description of the People's Democratic Republic of Yemen, focusing on the information that applies more specifically to your deployment area.

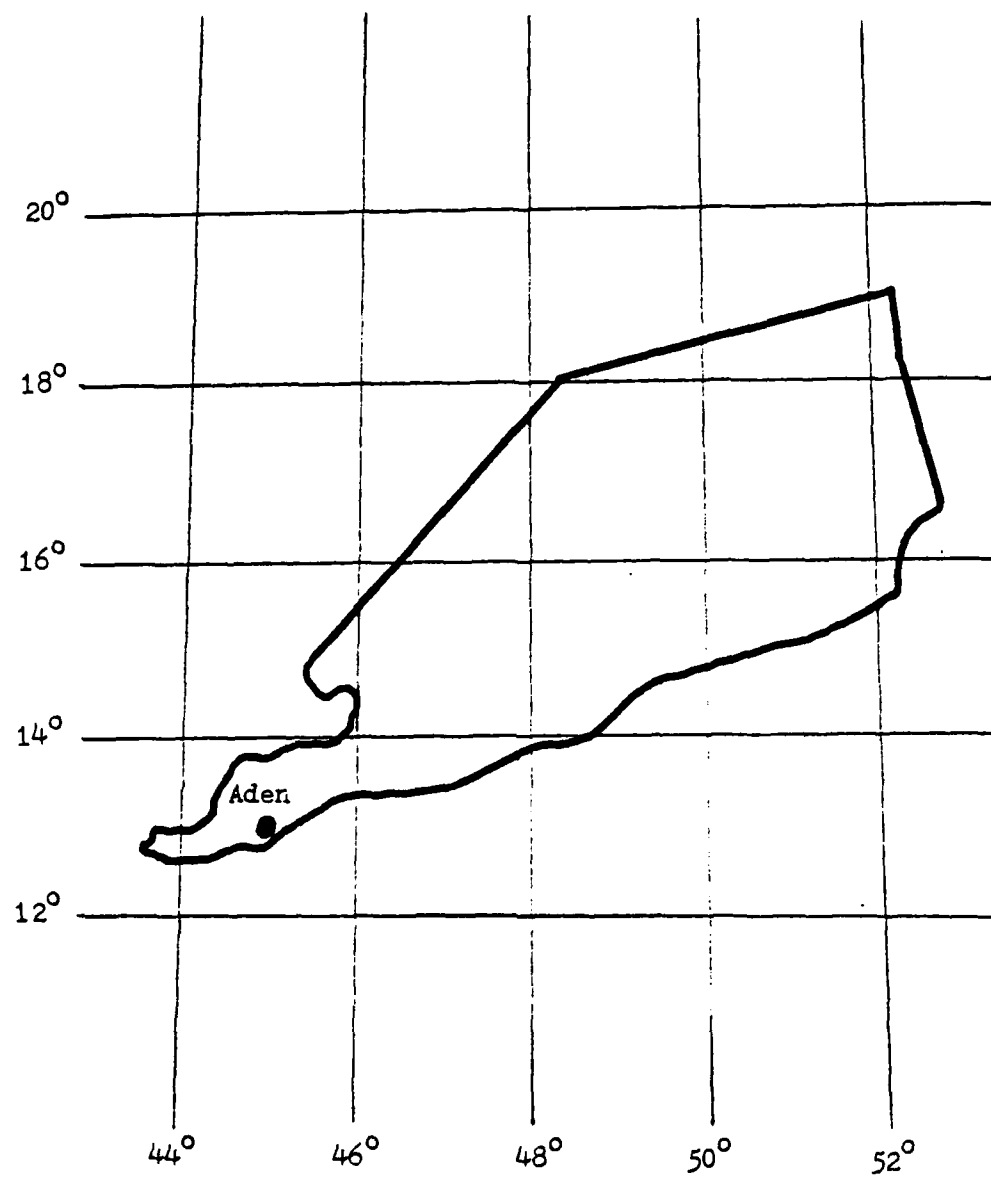


FIGURE 8.1

Map of the PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN
with Latitude and Longitude References

TABLE 8.1

Alphabetical List of PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN Airfields
and their Coordinates

Airfield Name	Geographic Coordinates
Aden International (Khormaksar)	12°50'N 45°02'E
Al Anad	13°10'N 44°46'E
Al Ayn	15°52'N 47°39'E
Al Ghaydah	16°12'N 52°11'E
Ataq	14°33'N 46°50'E
Awsha	14°35'N 46°37'E
Beihaan	14°47'N 45°43'E
Dhala	13°45'N 44°43'E
Drilco 2	17°18'N 50°59'E
Freddies Field	14°08'N 46°48'E
Haura	15°53'N 48°17'E
Husn El Abr South	16°06'N 47°15'E
Kamaran Island	15°22'N 42°37'E
Lodar	13°54'N 45°52'E
Mayfaah	14°18'N 47°33'E
Mughr	17°30'N 50°18'E
Mukayris	13°55'N 45°39'E
Ras Karma	12°38'N 53°55'E
Riyan New	14°39'N 49°23'E
Sanau	17°59'N 51°02'E
Seiwun	15°58'N 48°48'E
Thamud	17°32'N 49°50'E
Thamud New	17°20'N 49°54'E
Uqlah	15°23'N 46°53'E
Warehouse	17°29'N 50°34'E
Western B	18°00'N 49°40'E
Western D	17°13'N 50°06'E
Western E	16°47'N 49°55'E
Western F	17°03'N 50°21'E
Western L	17°51'N 51°59'E
Zamakh	16°26'N 47°36'E

Demographic and Geographic Background:

People's Democratic Republic of Yemen

Geography

The People's Democratic Republic of Yemen is located along the southern coast of the Arabian peninsula. The country borders the Gulf of Aden for about 750 miles. Inland, there are no distinct borders between the People's Democratic Republic of Yemen and Saudi Arabia, because the northern border of the People's Democratic Republic of Yemen blends into an extremely hot, lifeless desert called the empty quarter (26:53). There are no permanent rivers, and the country is generally hot and barren (27:112).

Roads

The transportation system is underdeveloped, with only a few roads, mainly near the coast, connecting the major cities (27:130).

Population, Sanitation, Health Hazards

The two major cities in the People's Democratic Republic of Yemen are Aden (AH-dn), population 272,000, and Al Mukalla (al moo-KOW-lah), 65,000 (23:I-27).

Protein calorie malnutrition is widespread among the population, and a majority of rural inhabitants drink contaminated water from local wells (27:115). Lack of knowledge about proper diet contributes to malnutrition (27:167;180). Since there are no sewer systems, groundwater absorbs sewage. This results in frequent contamination of wells,

especially in rural areas (27:180). Aden, the capital city in the southwest corner of the country, is the most adequate for nutrition and water. Water is rationed in Al Mukalla (27:115).

Religion and Culture

The People's Democratic Republic of Yemen is a traditional Muslim country. Alcohol is strictly forbidden, although some is allowed to foreigners (27:270). Depending on the location, segregation and veiling of women can be very strict. Segregation of the sexes is more evident among city dwellers than rural women, because rural women have less opportunity for contact with men (27:85).

Climate

The climate of the People's Democratic Republic of Yemen is generally hot and dry. Rainfall is usually under five inches per year, and areas in the north and east part of the country may get no rain for periods of five years (27:92). Summers are hot and humid, with monsoon rains occurring in the southwest part of the country in July and again in September (27:92).

Briefing Notes for the People's Democratic Republic of Yemen

Military Rank and Insignia. The following list shows Army rank and insignia. Air Force rank and insignia are similar to U.S. Naval officer insignia (27:118).

Colonel

Star in a half moon and 2 stars

Lt Colonel	Star in a half moon and 1 star
Major	Star in a half moon
Captain	3 stars
1Lt	2 stars
2Lt	1 star

Diplomatic Relations. Diplomatic relations are currently suspended between the People's Democratic Republic of Yemen and the United States (41:220).

Airfield Summaries: People's Democratic Republic of Yemen

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about People's Democratic Republic of Yemen airfields over 4,000 feet long.

How to Use This Section

There are two ways to locate an airfield in this section:

1. If only an approximate deployment location is known, first determine the deployment zone from Figure 8.2. Next, turn to the figure containing a map of that zone. This map shows airfield locations in the zone (each number on the map indicates an airfield location). Airfields are numbered consecutively from north to south within each zone. Determine the number for your airfield, then turn the page to find the airfield summary corresponding to that number.

2. If the airfield name is known, locate the airfield in Table 8.2, note the appropriate zone, and go to the airfield summaries for the zone

indicated. Page through the airfield summaries until you find your airfield. Another method is to look up the airfield name in the index at the end of this report and turn to the page listed.

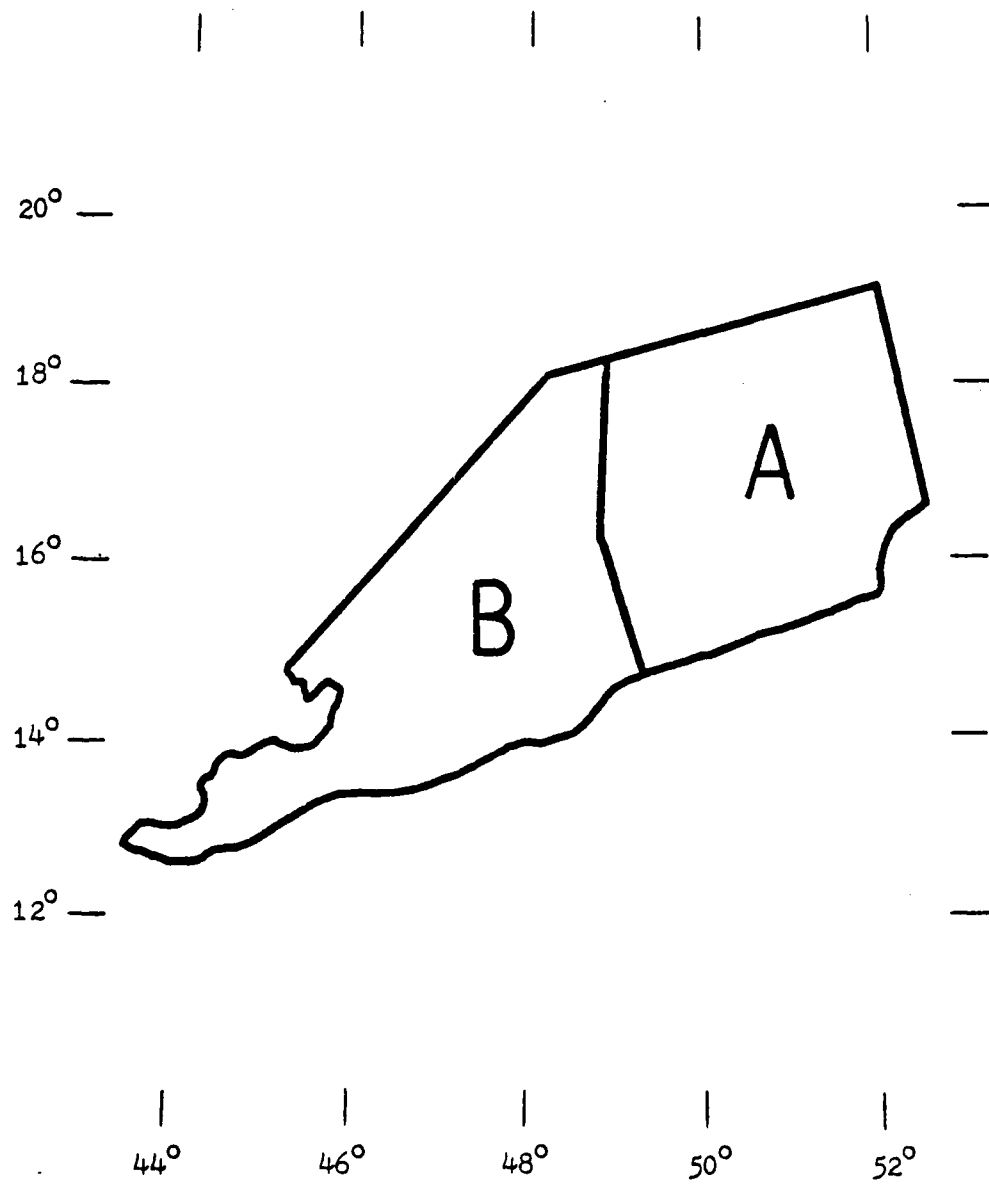


FIGURE 8.2
Airfield Location Zones For
the PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

TABLE 8.2

Alphabetical List of PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN

Airfields Keyed to Zones

Airfield Name	Zone	Airfield Name	Zone
Aden International (Khormaksar)	B	Mughr	A
Al Anad	B	Mudayris	B
Al Ayn	B	Ras Karma	B
Al Ghaydah	A	Riyan New	B
Ataq	B	Sanau	A
Awsha	B	Seiwun	B
Beiham	B	Thamud	A
Dhala	B	Thamud New	A
Drilco 2	A	Uglah	B
Freddies Field	B	Warehouse	A
Haura	B	Western B	A
Husn El Abr South	B	Western D	A
Kamaran Island	B	Western E	A
Lodar	B	Western F	A
Mayfaah	B	Western L	A
		Zamakh	B

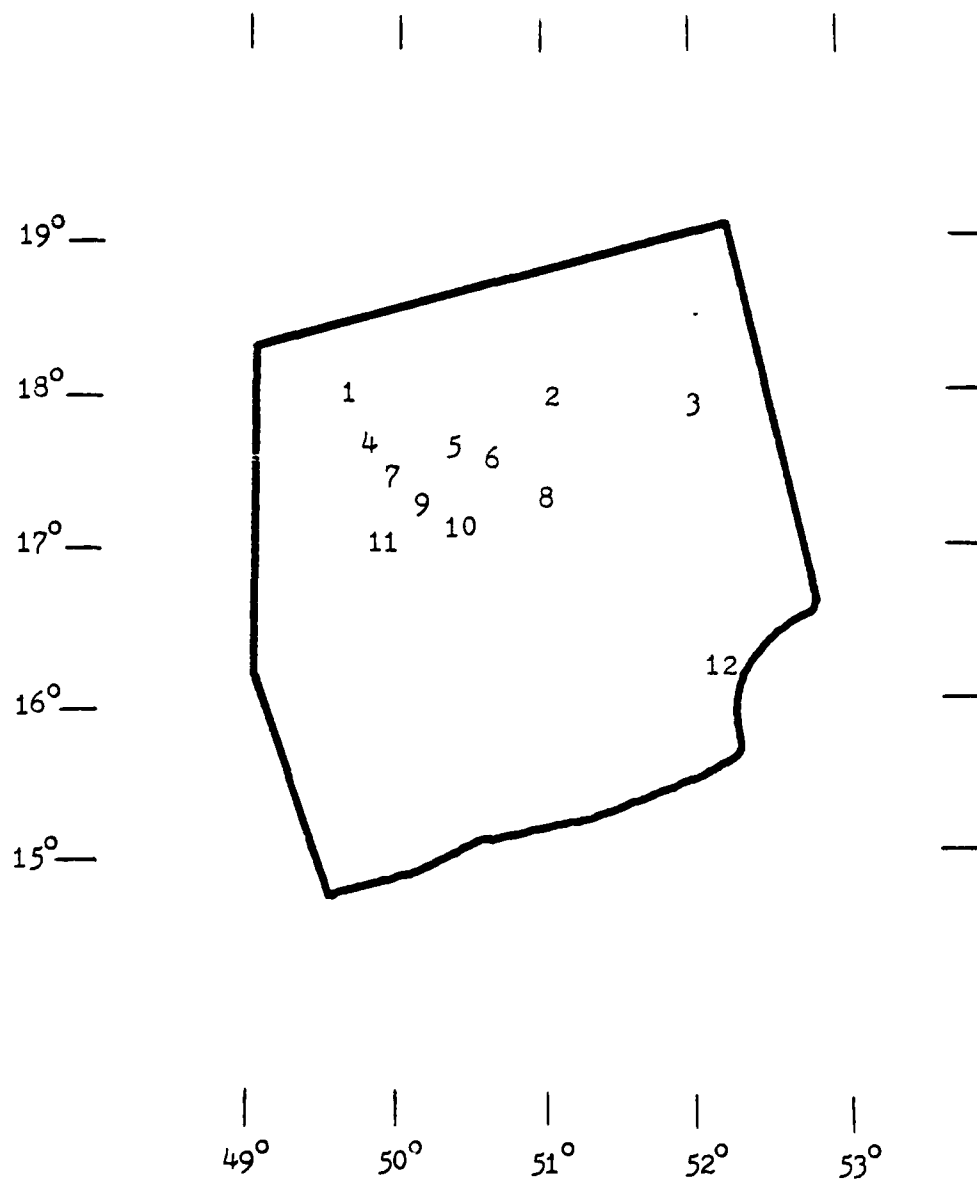


FIGURE 8.3
Airfields in the PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN,
Zone A

TABLE 8.3

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone A

1. WESTERN B

Location: 18°00'N 49°40'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 5,000 ft (34)
Elevation: 2,000 ft (34)
Local relief: sand and gravel plain; under 1,000 ft (34)
Local veg: shrubs and grasses or barren; desert (15; 34)
Nearby large cities: none (34)

2. SANAN

Location: 17°59'N 51°02'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,600 ft (34)
Elevation: 1,800 ft (34)
Local relief: under 1,000 ft; sand and gravel plain (34)
Local veg: shrubs and grasses or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

3. WESTERN L

Location: 17°51'N 51°59'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,600 ft (34)
Elevation: 1,750 ft (34)
Local relief: sand and gravel plain; under 1,000 ft (34)
Local veg: shrubs and grasses or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

TABLE 8.3 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone A

4. THAMUD

Location: 17°32'N 49°50'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,000 ft (34)
Elevation: 2,100 ft (34)
Local relief: under 1,000 ft; sand and gravel plain (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

5. MUGHR

Location: 17°30'N 50°18'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,000 ft (34)
Elevation: 1,300 ft (34)
Local relief: over 1,000 ft (34)
Local veg: shrubs and grasses or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

6. WAREHOUSE

Location: 17°29'N 50°34'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,300 ft (34)
Elevation: 2,100 ft (34)
Local relief: under 1,000 ft (34)
Local veg: shrubs and grasses or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

TABLE 8.3 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone A

7. THAMUD NEW

Location: 17°20'N 49°54'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,600 ft (34)
Elevation: 2,000 ft (34)
Local relief: under 1,000 ft; sand and gravel plain (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

8. DRILCO 2

Location: 17°18'N 50°59'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 2,500 ft estimate (34)
Local relief: sand and gravel plain; under 1,000 ft (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

9. WESTERN D

Location: 17°13'N 50°06'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,400 ft (34)
Elevation: 2,500 ft (34)
Local relief: under 1,000 ft; sand and gravel plain (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

TABLE 8.3 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone A

10. WESTERN F

Location: 17°03'N 50°21'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,200 ft (34)
Elevation: 2,500 ft (34)
Local relief: under 1,000 ft (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

11. WESTERN E

Location: 16°47'N 49°55'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,600 ft (34)
Elevation: 2,650 ft (34)
Local relief: under 1,000 ft (34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

12. AL GHAYDAH

Location: 16°12'N 52°11'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Elevation: 100 ft (34)
Runway length: 8,200 ft (34)
Local relief: rock outcroppings; sand and gravel; over
1,000 ft (34)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none (34)

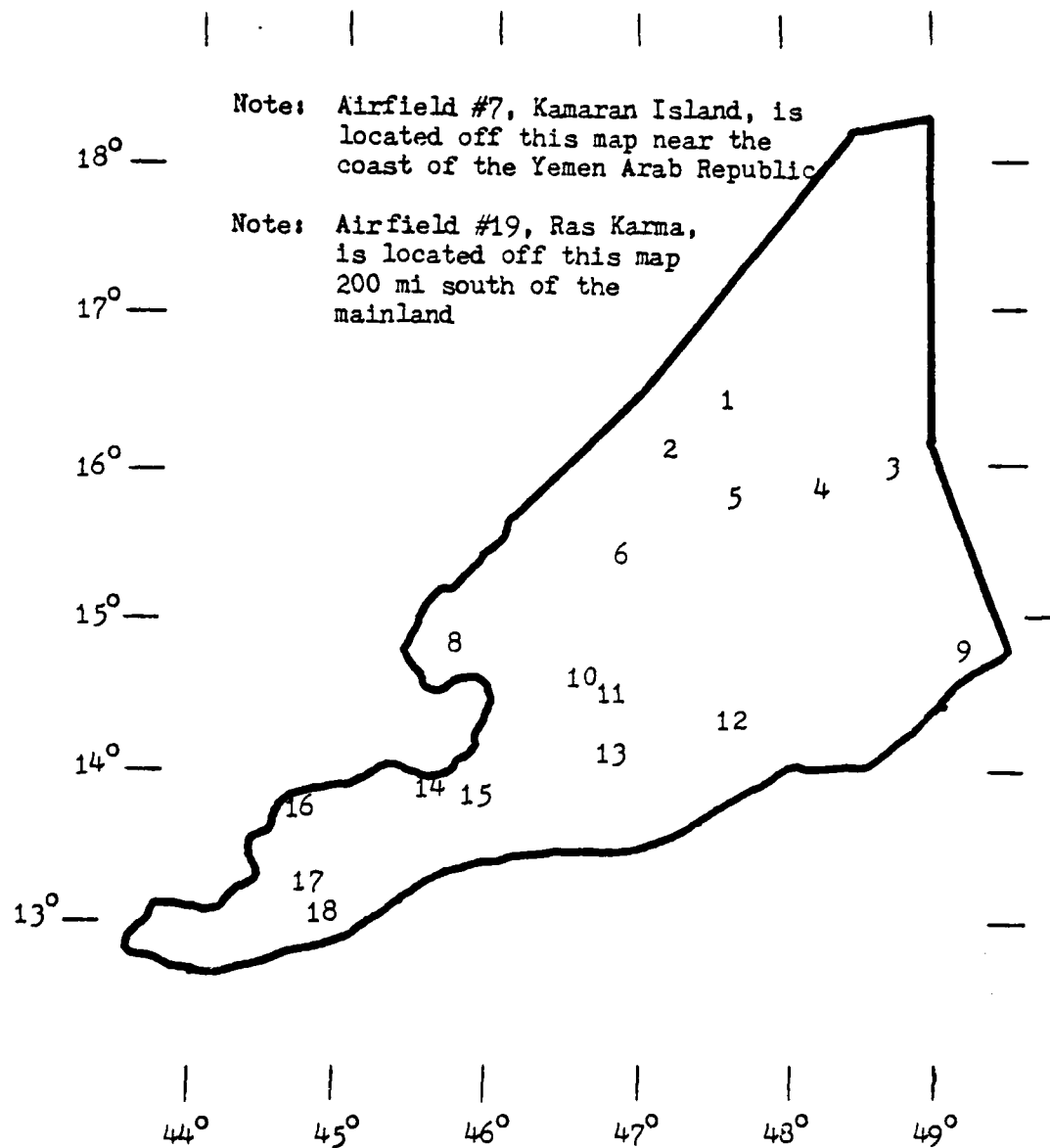


FIGURE 8.4

Airfields in the PEOPLE'S DEMOCRATIC REPUBLIC OF YEMEN,

Zone 8

TABLE 8.4

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

1. ZAMAKH

Location: 16°26'N 47°36'E (33)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,000 ft (33)
Elevation: 3,000 ft
Local relief: sand and gravel; rocks; over 1,000 ft (34)
Local veg: short life cycle vegetation or barren; desert
(15)
Nearby large cities: none (33)

2. HUSN EL ABR SOUTH

Location: 16°06'N 47°15'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,500 ft (36)
Elevation: 2,960 ft (36)
Local relief: over 1,000 ft (36)
Local veg: short life cycle vegetation or barren; desert
(15)
Nearby large cities: none (36)

3. SEIWUN

Location: 15°58'N 48°48'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 7,900 ft (36)
Elevation: 1,600 ft (36)
Local relief: over 1,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Say'un (town) 1 mile south; Tarim
(town) 20 miles northeast (23:I-27; 36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

4. HAURA

Location: 15°53'N 48°17'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,700 ft (36)
Elevation: 2,240 ft (36)
Local relief: over 1,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Haynan (town) 10 miles north;
Shibam (town) 30 miles northeast (23:I-27; 36)

5. AL AYN

Location: 15°52'N 47°39'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,600 ft (36)
Elevation: 2,300 ft (36)
Local relief: over 1,000 ft (36)
Local veg: short life cycle vegetation or barren; desert
(15)
Nearby large cities: none (36)

6. UZLAH

Location: 15°23'N 46°53'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,500 ft (36)
Elevation: 2,790 ft (36)
Local relief: over 500 ft (36)
Local veg: shrubs and grasses, or barren; tropical tendency
(15)
Nearby large cities: none (36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

7. KAMARAN ISLAND

Location: 15°22'N 42°37'E (37:B130)
Users: civilian (37:B130)
Pavement: gravel (37:B130)
No. runways: 1 (8)
Runway length: 6,000 ft (37:B130)
Elevation: 51 ft (37:B130)
Local relief: under 100 ft (35)
Local veg: shrubs, cactus, grasses; tropical tendency (15)
Nearby large cities: Al Hudaydah, pop. 80,000, 50 miles
southeast (23:I-27; 35). Note: Although this
island is two miles from the mainland of the Yemen Arab
Republic, it is owned by the Yemen Democratic Republic.
Travel to Al Hudaydah will require crossing an
international border (35).

8. BEIHAN

Location: 14°47'N 45°43'E (37:B31)
Users: civilian (37:B31)
Pavement: asphalt (37:B31)
No. runways: 1 (8)
Runway length: 5,600 ft (37:B31)
Elevation: 3,600 ft (37:B31)
Local relief: over 3,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none (36)

9. RIYAN NEW

Location: 14°39'N 49°23'E (37:B223)
Users: civilian (37:B223)
Pavement: asphalt (37:B223)
No. runways: 3 (8)
Runway length: 9,600 ft (37:B223)
Elevation: 57 ft (37:B223)
Local relief: under 500 ft; mountains 10 miles north; Gulf of
Aden 1 mile south (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: Al Mukalla, pop. 65,000, 15 miles west
(23:I-27; 36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

10. AWSHA

Location: 14°35'N 46°37'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,100 ft (36)
Elevation: 3,575 ft
Local relief: over 1,000 ft; fairly level around airfield
(36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Nisab (town) 10 miles southwest
(23:I-27; 36)

11. ATAQ

Location: 14°33'N 46°50'E (36)
Users: no data
Pavement: no data
No. runways: 3 (8)
Runway length: 8,800 ft (36)
Elevation: 3,600 ft (36)
Local relief: over 1,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Nisab (town), 25 miles west
(23:I-27; 36)

12. MAYFAAH

Location: 14°18'N 47°33'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,100 ft (36)
Elevation: 1,476 ft (36)
Local relief: over 5,000 ft; fairly level near airfield (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none (36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

13. FREDDIES FIELD

Location: 14°08'N 46°48'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,800 ft (36)
Elevation: 2,250 ft (36)
Local relief: over 3,000 ft (36)
Local veg: shrubs, thickets, grasses; tropical tendency (15)
Nearby large cities: none (36)

14. MUKAYRIS

Location: 13°55'N 45°39'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,200 ft (36)
Elevation: 7,050 ft (36)
Local relief: over 2,000 ft; airfield located on top of a plateau (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Mukayras (town) 1 mile north (23:I-27; 36)

15. LODAR

Location: 13°54'N 45°52'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,100 ft (36)
Elevation: 3,300 ft (36)
Local relief: over 5,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: none. Lodar (town) 1 mile south (23:I-27; 36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC

REPUBLIC OF YEMEN, Zone B

16. DHALA

Location: 13°25'N 44°43'E (36)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 4,000 ft (36)
Elevation: 4,750 ft (36)
Local relief: over 3,000 ft (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: Aden, pop. 272,000, 70 miles south
(23:I-27; 36)

17. AL ANAD

Location: 13°10'N 44°46'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 11,000 ft estimate (36)
Elevation: 900 ft (36)
Local relief: over 3,000 ft; fairly level near airfield;
mountains 10 miles north (36)
Local veg: shrubs and grasses; tropical tendency (15)
Nearby large cities: Aden, pop. 272,000, 25 miles southeast
(23:I-27; 36)

18. ADEN INTERNATIONAL (Khormaksar)

Location: 12°50'N 45°02'E (37:B3)
Users: military and civilian (37:B3)
Pavement: asphalt (37:B3)
No. runways: 4 (8)
Runway length: 8,400 ft (37:B3)
Elevation: 12 ft (37:B3)
Local relief: under 500 ft; mountains 20 miles north (36)
Local veg: shrubs, cactus, grasses; tropical tendency (15)
Nearby large cities: Aden, pop. 272,000, 1 mile south
(23:I-27; 36)

TABLE 8.4 (cont.)

Airfield Summary List for the PEOPLE'S DEMOCRATIC
REPUBLIC OF YEMEN, Zone B

19. RAS KARMA

Location: 12°38'N 53°55'E (36)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 9,500 ft (36)
Elevation: 150 ft (36)
Local relief: under 3,000 ft (36)
Local veg: scattered grasses and shrubs; barren (23:319)
Nearby large cities: none. Note: this airfield is located on
the north shore of Socotra, an island 70 miles long and 20
miles wide located 200 miles south of the Yemen Democratic
Republic (36)

CHAPTER IX
DEPLOYMENT LOCATION SPECIFIC INFORMATION: OMAN

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Oman. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Oman. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, Oman armed forces rank and insignia, and other information about Oman. The last part of the chapter contains airfield summaries of 41 airfields in Oman large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that generally applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 9.1 and the alphabetical airfield listing in Table 9.1. Mark the approximate airfield location on the map in Figure 9.1. Keeping this location in mind, read the entire narrative description of Oman, focusing on the information that applies more specifically to your deployment area.

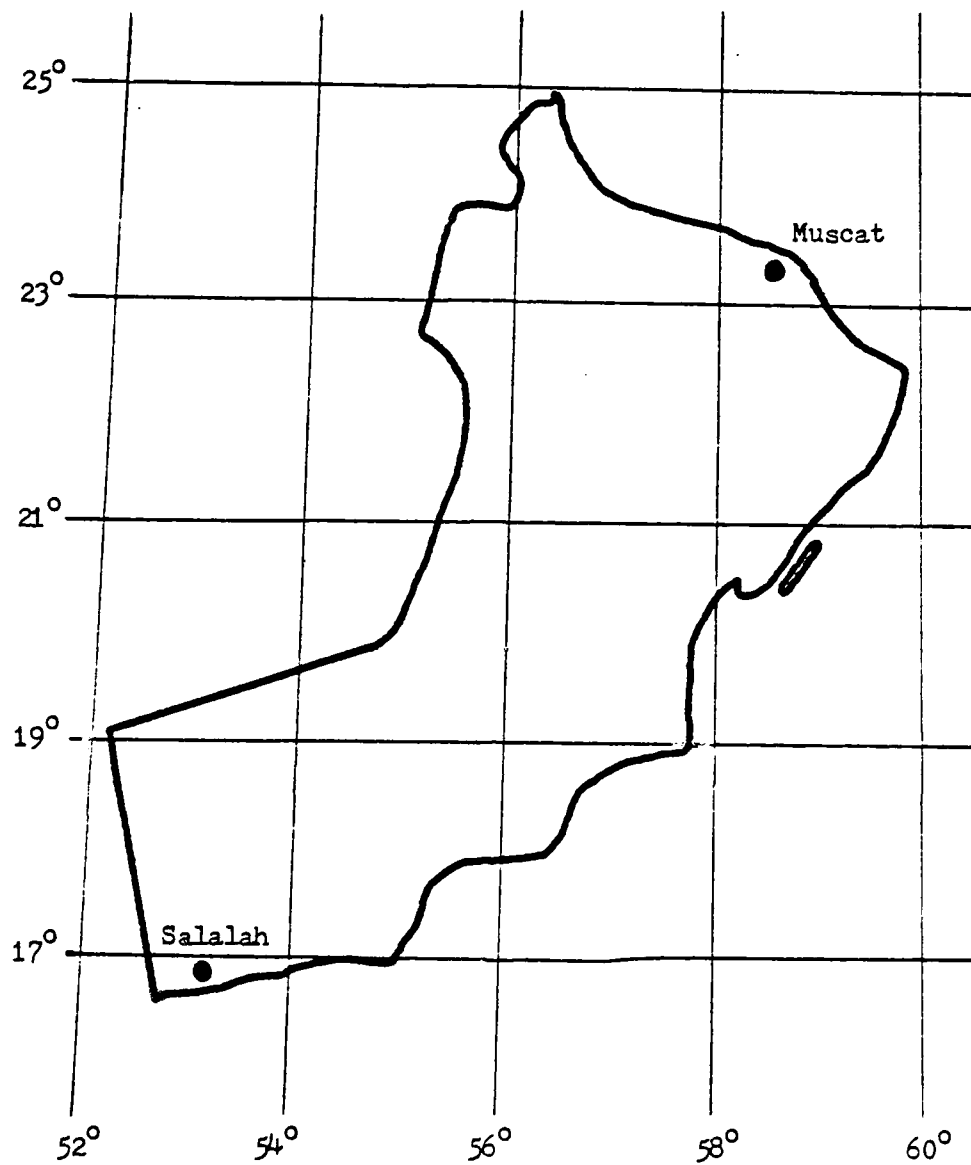


FIGURE 9.1

Map of OMAN with Latitude and Longitude References

TABLE 9.1

Alphabetical List of Airfields in OMAN and their Coordinates

Airfield Name	Geographic Coordinates
Afar	22°06'N 57°40'E
Al Ghubar	20°53'N 56°21'E
Al Hanw	19°35'N 55°22'E
Al Huwaisa West	21°57'N 55°47'E
Al Matruh	21°46'N 56°12'E
Andhur	17°42'N 54°38'E
Barik	20°55'N 56°30'E
Birba	18°30'N 55°08'E
Butabul	20°57'N 55°33'E
Dhuqa	18°40'N 54°03'E
Fahud	22°14'N 56°31'E
Fahud Central	22°21'N 56°29'E
Firq	22°52'N 57°33'E
Ghaba Central	21°21'N 57°05'E
Ghufos	19°17'N 55°55'E
Haima North	19°57'N 56°18'E
Hayl At Harashif	20°36'N 56°59'E
Hazam 2	23°37'N 57°32'E
Ibri 1	23°14'N 56°33'E
Iski New (Zukayt)	22°54'N 57°46'E
Jarf North	18°14'N 55°40'E
Manston	16°59'N 53°22'E
Marmul Nasir	18°09'N 55°09'E
Masirah	20°41'N 58°53'E
Montasar	19°27'N 54°36'E
Mukhaizna North	19°25'N 56°23'E
Nihayday North	21°05'N 56°58'E
Qaara East	21°48'N 57°30'E
Qarat Al Milh	21°41'N 57°20'E
Qitbit	18°35'N 54°41'E
Ras Al Hadd	22°32'N 59°48'E
Saghawt	18°18'N 55°48'E
Saih Rawl	21°23'N 56°53'E
Salalah	17°02'N 54°06'E
Samim	21°40'N 55°46'E
Seeb International	23°35'N 58°17'E
Sharkutina	21°31'N 58°02'E
Shigag	19°33'N 54°11'E
Shuwaiqi	21°50'N 56°30'E
Thrumrait (Midway)	17°40'N 54°01'E
Yibal	22°12'N 56°00'E

Demographic and Geographic Background: Oman

Geography

Oman is located on the southeast corner of the Arabian peninsula. It is bordered by the Indian Ocean to the south, the People's Republic of Yemen to the east, and Saudi Arabia and the United Arab Emirates to the north. The inland areas consist mostly of stony or sandy desert, with some vegetation near the coast, especially along the southwest coast (25:360). Only the southern part of the province, benefiting from the Indian Ocean monsoon, has year-around streams (25:360).

Roads

In 1976, the only paved road in the country ran for a short distance along the northern coast. Only secondary roads connect the population centers (25:340).

Population, Sanitation, Health Hazards

Except for the capital city of Muscat (MUS-kat), population 50,000, the remaining population centers are small towns with a population generally under 10,000 (45:169).

Contaminated food and water, and malaria are the greatest health hazards to Prime BEEF team members in Oman (41:183):

- DO -boil all drinking water.
- wash, peel, or cook all food.
- use canned or dried milk.
- take antimalarial tablets. See Table 4.2 for drug types and doses.

DO NOT --drink milk produced locally.

Religion and Culture

Oman is a conservative, traditional Muslim country where tribal affiliations are important. The traditional social order is based on isolation and localism (25:65). Tribal leaders are important in local affairs, but a growing national bureaucracy has lessened their power (25:65).

Climate

The climate in Oman is extremely hot and dry, with the exception of the southwest part of the country (25:360). Along the coast, temperatures are moderated somewhat by the ocean. The average daytime high coastal temperature is 25°C (77°F) in January, with an average nighttime low temperature of 18°C (65°F). In May, the average daytime high temperature is 34°C (94°F), with an average nighttime low temperature of 29°C (84°F) (34:159). Humidity generally increases along the coast from north to south, and averages between 65 and 80 percent in the north and 60 and 92 percent in the south. For the entire country, the most humid months are during the summer (34:153;157). Rainfall along the coastal areas averages 1 to 5 inches per year; mountain areas may receive up to 15 inches per year (25:361).

Briefing Notes for Oman

Electric Supply. 220V AC 50 Hz; plugs are 2 or 3 pin round or 3 pin flat (45:172).

Fixed Holidays. (Julian calendar) (45:174).

18 Nov National Day (date can vary)

19 Nov Sultan's Birthday

Local Time. Greenwich Mean Time plus 4 hours (5 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2100 hours in Muscat, 2200 hours during daylight savings time (41:174).

Military Rank and Insignia. (25:407).

Colonel	Crown and 2 stars
Lt Colonel	Crown and 1 star
Major	Crown
Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Prohibited Items. (45:172)

1. Alcohol.
2. Pornographic literature.

Weights and Measures. Metric system (see Appendix A) (45:174).

Airfield Summaries: Oman

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about airfields in Oman over 4,000 feet long.

How to Use This Section

There are two ways to locate an airfield in this section:

1. If only an approximate deployment location is known, first determine the deployment zone from Figure 9.2. Next, turn to the figure containing a map of that zone. This map shows airfield locations in the zone (each number on the map indicates an airfield location). Airfields are numbered consecutively from north to south within each zone. Determine the number for your airfield, then turn the page to find the airfield summary corresponding to that number.

2. If the airfield name is known, locate the airfield in Table 9.2, note the appropriate zone, and go to the airfield summaries for the zone indicated. Page through the airfield summaries until you find your airfield. Another method is to look up the airfield name in the index at the end of this report and turn to the page listed.

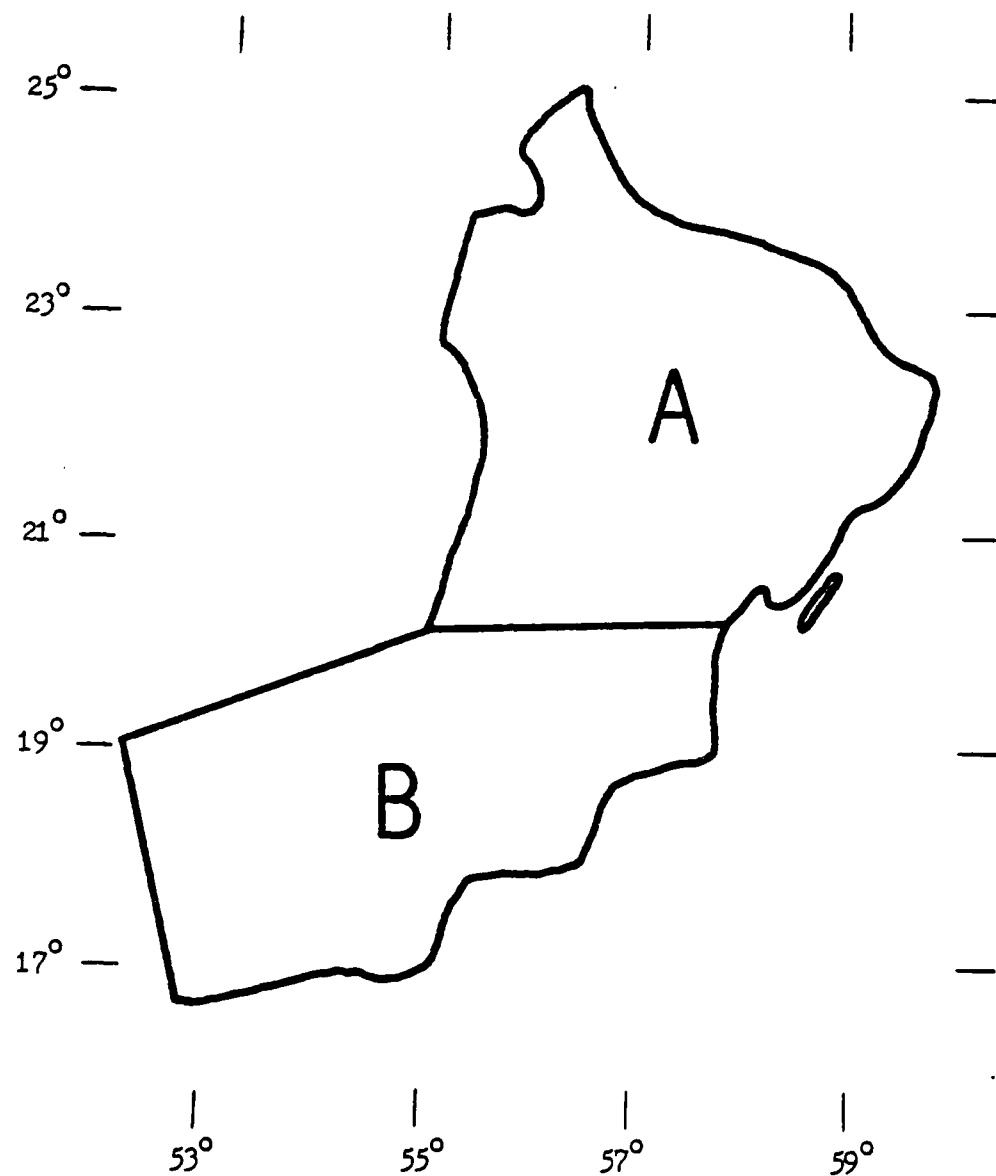


FIGURE 9.2
Airfield Location Zones For OMAN

TABLE 9.2

Alphabetical List of Airfields in OMAN Keyed to Zones

Airfield Name	Zone	Airfield Name	Zone
Afar	A	Manston	B
Al Ghubar	A	Marmul Nasir	B
Al Hanw	B	Masirah	A
Al Huwaisa West	A	Montasar	B
Al Matruh	A	Mukhaizna North	B
Andhur	B	Nihayday North	A
Barik	A	Qaara East	A
Birba	B	Qarat Al Milh	A
Butabul	A	Qitbit	B
Dhuqa	B	Ras Al Hadd	A
Fahud	A	Saghawt	B
Fahud Central	A	Saih Rawl	A
Firq	A	Salalah	B
Ghaba Central	A	Samim	A
Ghufos	B	Seeb International	A
Haima North	B	Sharkutina	A
Hayl At Harashif	A	Shigag	A
Hazam 2	A	Shuwaiqi	A
Ibri 1	A	Thrumrait (Midway)	B
Iski New (Zukayt)	A	Yibal	A
Jarf North	B		

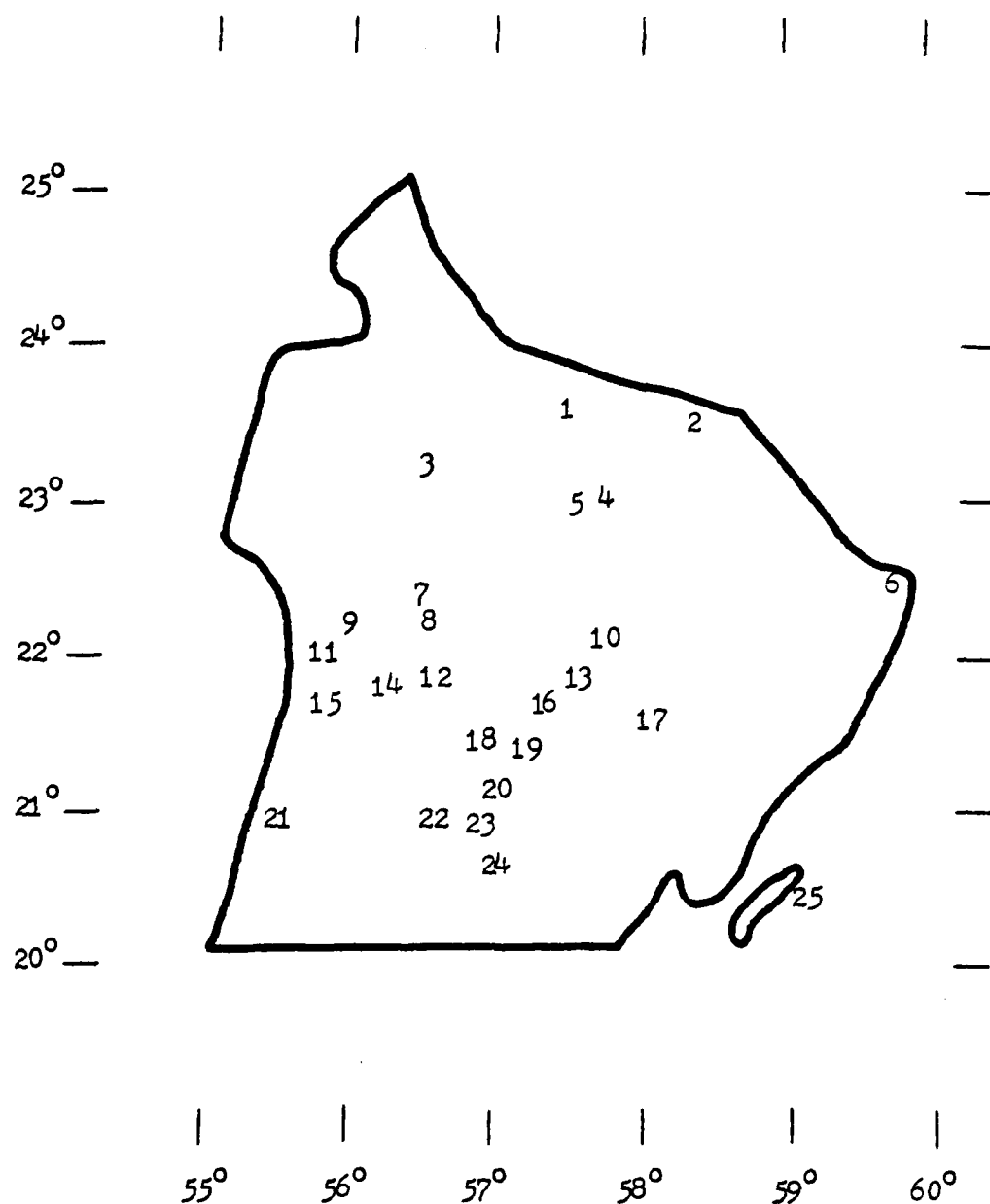


FIGURE 9.3
Airfields in OMAN, Zone A

TABLE 9.3

Airfield Summary List for OMAN, Zone A

1. HAZAM 2

Location: 23°37'N 57°32'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 9,000 ft (34)
 Elevation: 425 ft (34)
 Local relief: over 5,000 ft; fairly level near airfield;
 mountains 10 miles south (23:317; 34)
 Local veg: patches of grass; shrubs; desert tendency (15)
 Nearby large cities: none. Matrah and Muscat, combined
 population 20,000, 70 miles east (23:1-22; 34)

2. SEEB INTERNATIONAL

Location: 23°35'N 58°17'E (37:B239)
 Users: civilian (37:B239)
 Pavement: asphalt (37:B239)
 No. runways: 1 (8)
 Runway length: 11,700 ft (37:B239)
 Elevation: 48 ft (37:B239)
 Local relief: over 5,000 ft; fairly level near airfield;
 mountains 10 miles south (23:317; 34)
 Local veg: patches of grass; shrubs; desert tendency (15)
 Nearby large cities: none. Matrah and Muscat, combined
 population 20,000, 15 miles east (23:1-22; 34)

3. IBRI 1

Location: 23°14'N 56°33'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,900 ft (34)
 Elevation: 1,450 ft (34)
 Local relief: over 5,000 ft; fairly level near airfield,
 mountains nearby to the north and east (23:317; 34)
 Local veg: patches of grass; shrubs; desert tendency
 (15; 23:319)
 Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

4. ISKI NEW (Zukayt)

Location: 22°54'N 57°46'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,600 ft (34)
Elevation: 1,765 ft (34)
Local relief: over 5,000 ft; steep mountains 10 miles north
(23:317; 34)
Local veg: shrubs and grasses; tropical tendency (15; 34)
Nearby large cities: none. Nazwa (town) 15 miles west
(23:I-22; 34)

5. FIRQ

Location: 22°52'N 57°33'E (34)
Users: no data
Pavement: no data
Runway length: 5,400 ft (34)
No. runways: 1 (8)
Elevation: 1,450 ft (34)
Local relief: over 5,000 ft; steep mountains 10 miles north
(23:317; 34)
Local veg: shrubs and grasses; tropical tendency (15; 34)
Nearby large cities: none. Nazwa (town) 5 miles north
(23:I-22; 34)

6. RAS AL HADD

Location: 22°32'N 59°48'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 4,800 ft (34)
Elevation: 10 ft (34)
Local relief: under 5,000 ft; fairly level near airfield;
mountains 10 miles west (34)
Local veg: patches of grass and shrubs; tropical tendency
(15; 34)
Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

7. FAHUD CENTRAL

Location: 22°21'N 56°29'E (37:B86)
Users: private (37:B86)
Pavement: sand (37:B86)
No. runways: 2 (8)
Runway length: 5,900 ft (37:B86)
Elevation: 552 ft (37:B86)
Local relief: gravel hills and plains; 100-300 ft
(23:317; 34)
Local veg: shrubs, grasses, or barren; tropical tendency
(15; 34)
Nearby large cities: none (34)

8. FAHUD

Location: 22°14'N 56°31'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 5,600 ft (34)
Elevation: 534 ft (34)
Local relief: gravel hills or plains; 100-300 ft
(23:317; 34)
Local veg: shrubs, grasses, or barren; tropical tendency
15; 34)
Nearby large cities: none (34)

9. YIBAL

Location: 22°12'N 56°00'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,900 ft (34)
Elevation: 389 ft (34)
Local relief: gravel hills and plains; 100-300 ft
(23:317; 34)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

10. AFAR

Location: 22°6'N 57°40' (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 5,300 ft (34)
 Elevation: 725 ft (34)
 Local relief: rocky or gravel hills and ridges; near 300 ft (34)
 Local veg: shrubs, grasses, or barren; desert tendency (15)
 Nearby large cities: none (34)

11. AL HUWAISA WEST

Location: 21°57'N 55°47'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,600 ft (34)
 Elevation: 210 ft (34)
 Local relief: sand or gravel plains; 100-300 ft (23:317; 34)
 Local veg: brief life cycle vegetation or barren; desert (15)
 Nearby large cities: none (34)

12. SHUWAIQI

Location: 21°50'N 56°30'E (8)
 Users: no data
 Pavement: no data
 No. runways: 3 (8)
 Runway length: over 4,000 ft (8)
 Elevation: 350 ft estimate (34)
 Local relief: 100-300 ft (23:317)
 Local veg: brief life cycle vegetation or barren; desert (15)
 Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

13. QAARA EAST

Location: 21°48'N 57°30'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 650 ft estimate (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

14. AL MATRUH

Location: 21°46'N 56°12'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 300 ft estimate (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

15. QARAT AL MILH

Location: 21°41'N 57°20'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 530 ft (34)
Local relief: sand and gravel hills; 100-300 ft
(23:317; 34)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

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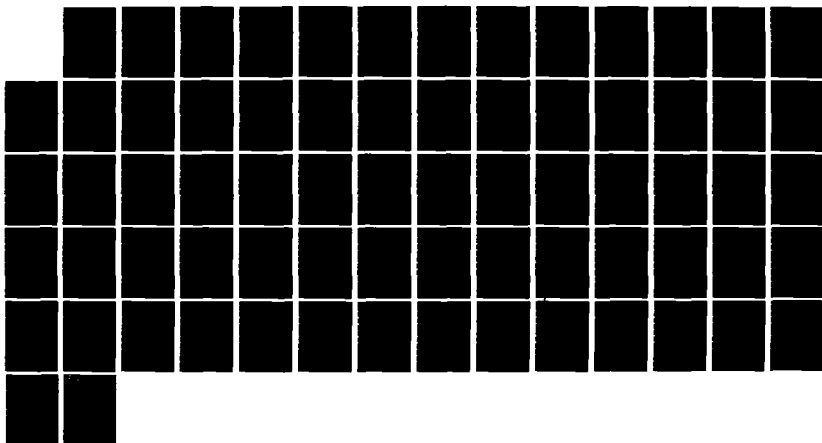
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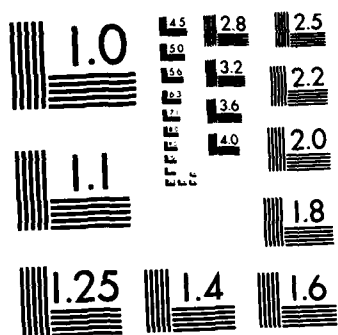
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MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

16. SAMIM

Location: 21°40'N 55°46'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 200 ft estimate (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

17. SHARKUTINA

Location: 21°31'N 58°02'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 360 ft (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

18. SAIH RAWL

Location: 21°23'N 56°53'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,300 ft (34)
Elevation: 395 ft (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

19. GHABA CENTRAL

Location: 21°21'N 57°05'E (37:B101)
Users: private (37:B101)
Pavement: rolled sand/gravel (37:B101)
No. runways: 2 (8)
Runway length: 6,400 ft (37:B101)
Elevation: 443 ft (37:B101)
Local relief: 100-300 ft; sand and gravel plain
(23:317; 34)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

20. NIHAYDAY NORTH

Location: 21°05'N 56°58'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 5,700 ft (34)
Elevation: 420 ft (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
Nearby large cities: none (34)

21. BUTABUL

Location: 20°57'N 55°33'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 4,300 ft (34)
Elevation: 357 ft (34)
Local relief: sand dunes; 100-300 ft
Local veg: barren; desert (15)
Nearby large cities: none (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

22. BARIK

Location: 20°55'N 56°30'E (8)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: over 4,000 ft (8)
 Elevation: 400 ft (11)
 Local relief: sand and gravel plain; 100-300 ft
 (23:317; 34)
 Local veg: brief life cycle vegetation or barren; desert
 (15)
 Nearby large cities: none (34)

23. AL GHUBAR

Location: 20°53'N 56°21'E (34)
 Users: no data
 Pavement: no data
 No. runways: 2 (8)
 Runway length: 4,400 ft (34)
 Elevation: 500 ft (34)
 Local relief: sand and gravel plain; 100-300 ft
 (23:317; 34)
 Local veg: brief life cycle vegetation or barren; desert
 Nearby large cities: none (34)

24. MASIRAH

Location: 20°41'N 58°53'E (37:B174)
 Users: Oman Air Force (37:B174)
 Pavement: asphalt (37:B174)
 No. runways: 2 (8)
 Runway length: 8,200 ft (37:B174)
 Elevation: 62 ft (37:B174)
 Local relief: under 1,000 ft (34)
 Local veg: shrubs and grasses; tropical tendency (15)
 Nearby large cities: none. Note: this airfield is located
 on an island 40 miles long by 10 miles wide, 10 miles from
 the mainland (34)

TABLE 9.3 (cont.)

Airfield Summary List for OMAN, Zone A

25. HAYLAT HARASHIF

Location: 20°36'N 56°59'E (34)

Users: no data

Pavement: no data

No. runways: 2 (8)

Runway length: 5,000 ft (34)

Elevation: 450 ft (34)

Local relief: sand and gravel plain; 100-300 ft
(23:317; 34)

Local veg: brief life cycle vegetation or barren; desert
(15)

Nearby large cities: none (34)

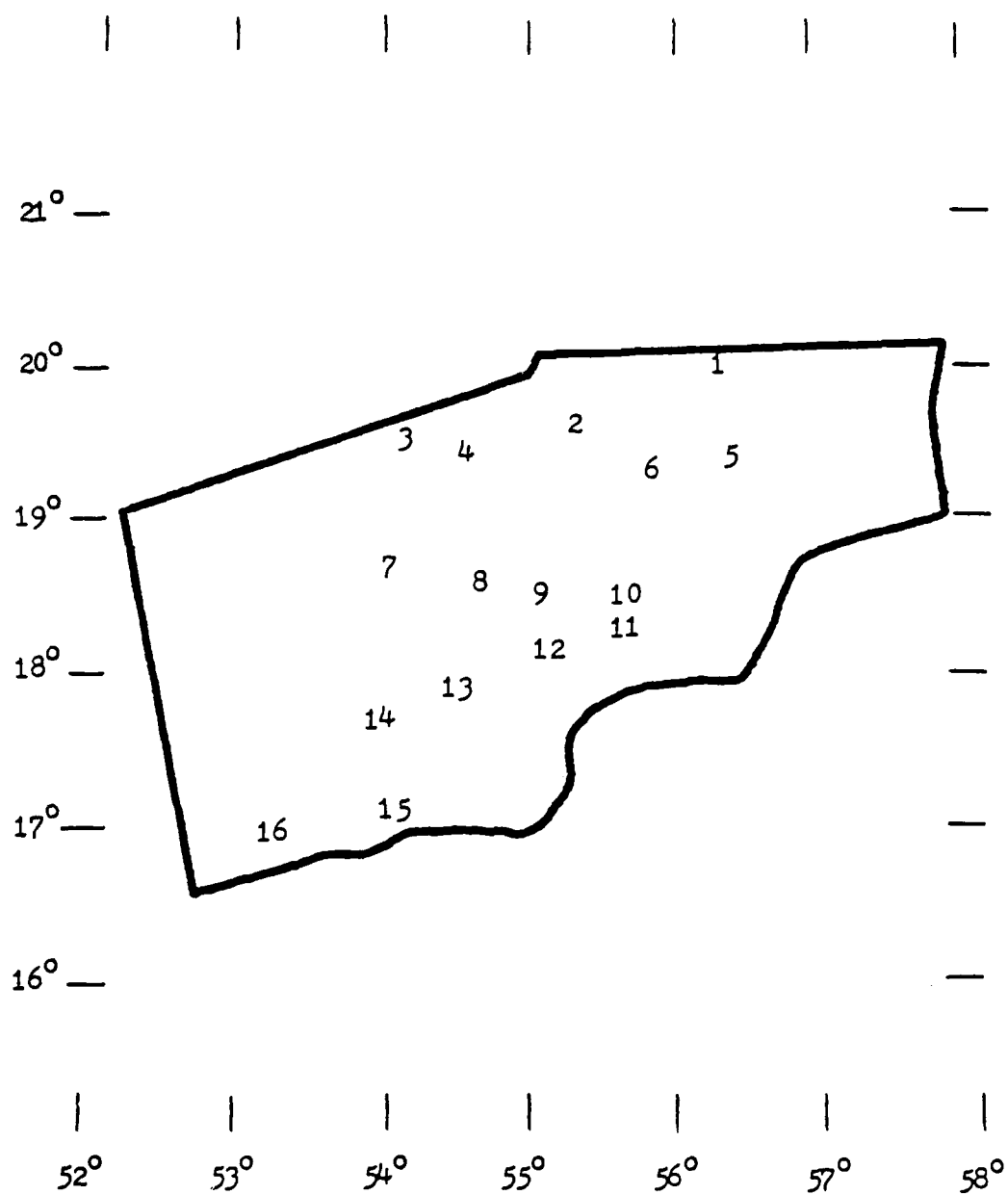


FIGURE 9.4
Airfields in OMAN, Zone B

TABLE 9.4

Airfield Summary List for OMAN, Zone B

1. HAIMA NORTH

Location: 19°57'N 56°18'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 6,300 ft (34)
Elevation: 400 ft (34)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

2. AL HANW

Location: 129°35'N 55°22'E (11)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: over 4,000 ft (8)
Elevation: 420 ft (11)
Local relief: sand and gravel plain; 100-300 ft
(23:317; 34)
Local veg: barren; desert (15)
Nearby large cities: none (34)

3. SHIGAG

Location: 19°33'N 54°11'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 410 ft (11)
Local relief: sand; 100-300 ft (34)
Local veg: barren; desert (15)
Nearby large cities: none (34)

TABLE 9.4 (cont.)

Airfield Summary List for OMAN, Zone B

4. MONTASAR

Location: 19°27'N 54°36'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,600 ft (34)
Elevation: 490 ft (34)
Local relief: sand; 100-300 ft (23:317; 34)
Local veg: barren; desert (15)
Nearby large cities: none (34)

5. MUKHAIZNA NORTH

Location: 19°25'N 56°23'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 456 ft (11)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert (15)
Nearby large cities: none (34)

6. GHUFOS

Location: 19°17'N 55°55'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,800 ft (34)
Elevation: 600 ft approximate (34)
Local relief: sand and gravel plain; 100-300 ft (23:317; 34)
Local veg: brief life cycle vegetation or barren; desert (15)
Nearby large cities: none (34)

TABLE 9.4 (cont.)

Airfield Summary List for OMAN, Zone B

7. DHUQA

Location: 18°40'N 54°03'E (34)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 8,000 ft (34)
Elevation: 700 ft (34)
Local relief: sand and gravel plain; 100-300 ft
(23:317; 34)
Local veg: barren; desert (15)
Nearby large cities: none (34)

8. QITBIT

Location: 18°35'N 54°41'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 650 ft estimate (11)
Local relief: 100-300 ft (23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

9. BIRBA

Location: 18°30'N 55°08'E (8)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 650 ft estimate (11)
Local relief: sand and gravel plain; 100-300 ft (34; 23:317)
Local veg: brief life cycle vegetation or barren; desert
(15)
Nearby large cities: none (34)

TABLE 9.4 (cont.)

Airfield Summary List for OMAN, Zone B

10. SAGHAWT

Location: 18°18'N 55°48'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,800 ft (34)
 Elevation: 650 ft (34)
 Local relief: sand and gravel plain; 100-300 ft (23:317; 34)
 Local veg: brief life cycle vegetation or barren; desert
 (23:319; 15)
 Nearby large cities: none (34)

11. JARF NORTH

Location: 18°14'N 55°40'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 7,300 ft (34)
 Elevation: 900 ft (34)
 Local relief: gravel plain; 100-300 ft (23:317; 34)
 Local veg: shrubs, grasses, or barren; tropical tendency
 (23:319; 15)
 Nearby large cities: none (34)

12. MARMUL NASIR

Location: 18°09'N 55°09'E (11)
 Users: no data
 Pavement: no data
 No. runways: 2 (8)
 Runway length: over 4,000 ft (8)
 Elevation: 925 ft (11)
 Local relief: gravel plain; 100-300 ft (23:317; 34)
 Local veg: shrubs, grasses, or barren; tropical tendency
 (23:319; 15)
 Nearby large cities: none (34)

TABLE 9.4 (cont.)

Airfield Summary List for OMAN, Zone B

13. ANDHUR

Location: 17°42'N 54°38'E (34)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 4,000 ft (34)
 Elevation: 1,575 ft (34)
 Local relief: 100-300 ft; gravel hills or plains
 (23:317; 34)
 Local veg: brief life cycle vegetation or barren; desert
 (15)
 Nearby large cities: none (34)

14. THUMRAIT (Midway)

Location: 17°40'N 54°01'E (37:B263)
 Users: Oman Air Force (37:B263)
 Pavement: asphalt (37:B263)
 No. runways: 2 (8)
 Runway length: 13,100 ft (37:B263)
 Elevation: 1,500 ft (37:B263)
 Local relief: 100-300 ft (23:317)
 Local veg: brief life cycle vegetation or barren; desert
 (15)
 Nearby large cities: none. Salalah (town) 40 miles south
 (23:I-22; 34)

15. SALALAH

Location: 17°02'N 54°06'E (37:B231)
 Users: civilian (37:B231)
 Pavement: asphalt and concrete (37:B231)
 No. runways: 2 (8)
 Runway length: 8,900 ft (37:B231)
 Elevation: 73 ft (37:B231)
 Local relief: under 5,000 ft (34)
 Local veg: shrubs and grasses; trees; tropical tendency
 (15; 34)
 Nearby large cities: none. Salalah (town) 2 miles south
 (23:I-22; 34)

TABLE 9.4 (cont.)

Airfield Summary List for OMAN, Zone B

16. MANSTON

Location: 16°59'N 53°22'E (34)

Users: no data

Pavement: no data

No. runways: 1 (8)

Runway length: over 4,000 ft (8)

Elevation: 3,000 ft (34)

Local relief: over 500 ft (34)

Local veg: shrubs and grasses; trees; tropical tendency
(15)

Nearby large cities: none. Salalah (town) 60 miles east
(23:I-22; 34)

CHAPTER X

DEPLOYMENT LOCATION SPECIFIC INFORMATION: UNITED ARAB EMIRATES

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about the United Arab Emirates. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about the United Arab Emirates. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, armed forces rank and insignia, and other information. The last part of the chapter contains airfield summaries of 15 airfields in the United Arab Emirates large enough to support a contingency flying mission.

How to Use This Section

The purpose of this section is to provide information that generally applies to the entire country. To use this section efficiently, you must determine your approximate deployment location. First, locate your deployment site using the map in Figure 10.1 and the alphabetical airfield listing in Table 10.1. Mark the approximate airfield location on the map in Figure 10.1. Keeping this location in mind, read the entire narrative description of the United Arab Emirates, focusing on the information that applies more specifically to your deployment area.

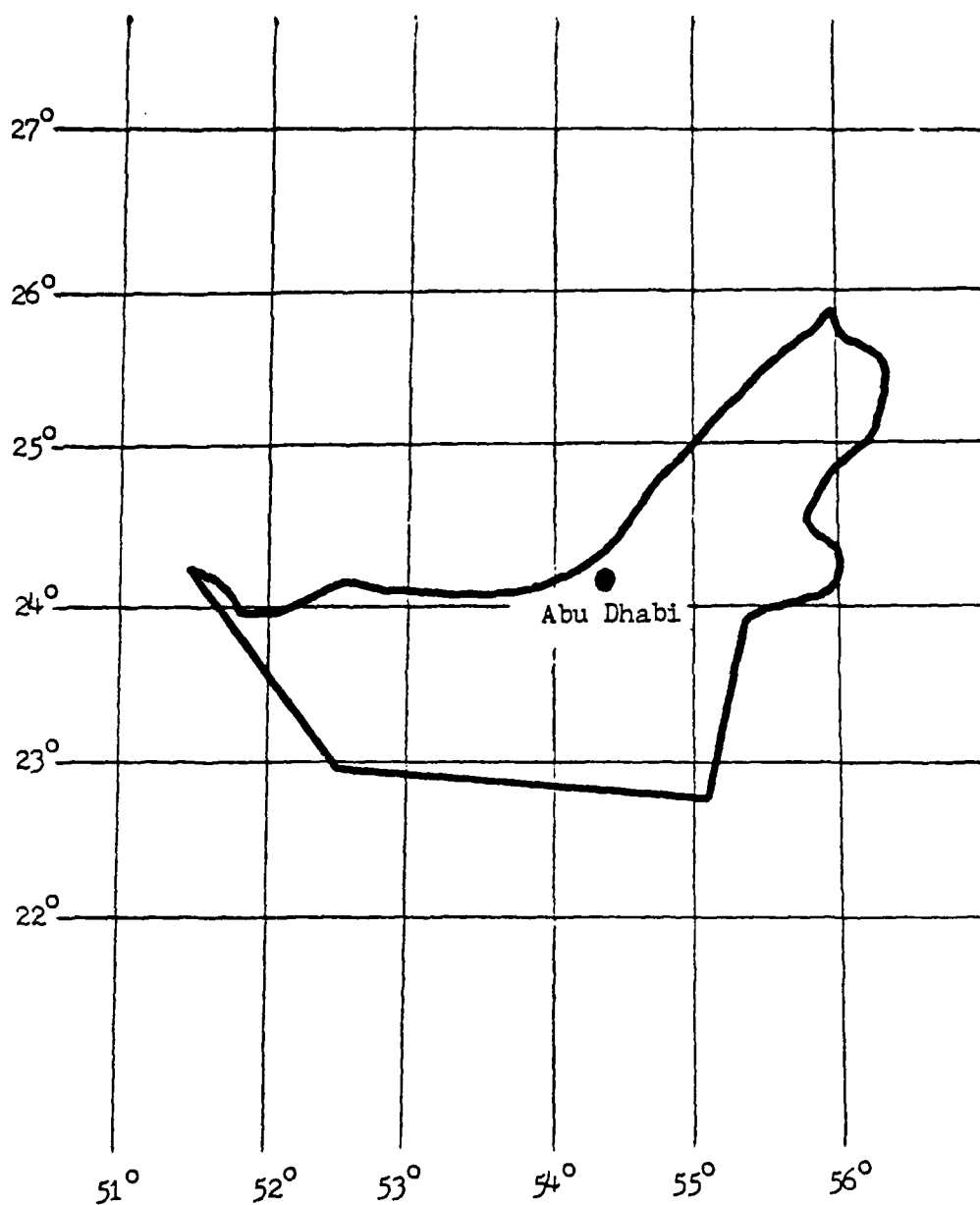


FIGURE 10.1
Map of the UNITED ARAB EMIRATES
with Latitude and Longitude References

TABLE 10.1
Alphabetical List of Airfields in the UNITED ARAB EMIRATES
and their Coordinates

Airfield Name	Geographic Coordinates
Abu Dhabi New International	24°26'N 54°39'E
Al Hamra Aux	24°04'N 52°28'E
Al Zarga Island	24°52'N 53°04'E
Bateen International (Abu Dhabi)	24°26'N 54°28'E
Buraymi Daudi	24°12'N 55°39'E
Das Island	25°09'N 52°53'E
Dubai International	25°15'N 55°22'E
Faiha	23°22'N 55°00'E
Jebel Dhana	24°11'N 52°36'E
Manadir	23°01'N 54°59'E
Muqatra (Abu Dhabi Military)	24°17'N 54°32'E
Ras Al Khaimah International	25°38'N 55°56'E
Sharjah International	25°20'N 55°31'E
Tarif	24°02'N 53°45'E
Yas Island	24°17'N 52°35'E

Demographic and Geographic Background: United Arab Emirates

Geography

The United Arab Emirates borders the southern edge of the Persian Gulf. On its eastern border is Oman; on its southern and western borders, Saudi Arabia; on its northwest border, Qatar. Most of the country is barren sand or sand and gravel plains. In the northeast corner of the country, the Hajar mountains rise 2,100 to 2,400 meters (7,000 to 8,000 feet) in places (25:299). The central and western part of the country is a desert plain. Large areas of the coast are salt marshes (25:299).

Roads

The transportation system of the United Arab Emirates is generally underdeveloped. A truck route between the east and part of the country was completed in 1976 (25:315).

Population, Sanitation, Health Hazards

The United Arab Emirates was formed by the consolidation of seven shiekdoms (emirates). Each emirate is named after its largest city. By far the largest emirate is Abu Dhabi (AH-boo DAH-bee), which covers most of the United Arab Emirates. The remaining six small emirates are located in about 10 percent of the total land area in the northeast corner of the United Arab Emirates (25:300).

For Prime BEEF team members, the greatest health hazards will be from heat, poor water quality, and malaria (41:260). Groundwater sources are very limited and often contaminated. Team members should take antimalarial drugs while in the United Arab Emirates. Reference Table 4.1 for drug types and doses.

Religion and Culture

The United Arab Emirates is a moderate Muslim country, not particularly strict (45:255). The customs and courtesies outlined in Chapter IV apply here. However, inhabitants of the United Arab Emirates are politically sensitive. Prime BEEF team members should avoid discussing politics with native Arabs (20:14).

Climate

The climate in the United Arab Emirates is hot and dry. Temperatures exceeding 49°C (120°F) are not unusual from June through September (25:299). In the mountains, temperatures are cooler; however, high humidity can make the coastal areas unpleasant during the summer months (25:299). Rainfall is generally less than 5 inches per year, but may be near 15 inches per year in the mountains. Rain falls in short torrentials during the summer (25:300).

Briefing Notes for the United Arab Emirates

Clothing. Lightweight tropical clothing is recommended year around (41:261).

Electric Supply. Abu Dhabi 240V AC 50 Hz. Elsewhere, 220V AC 50 Hz; plugs are 3-pin flat (13 amp) or 3-pin round (15 amp) (45:253).

Fixed Holidays. (Julian calendar) (45:254).

1 Jan	New Year's Day
6 Aug	Accession of the Ruler of Abu Dhabi
2 Dec	United Arab Emirates National Holiday

Local Time. Greenwich Mean Time plus 4 hours (5 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2100 hours in Abu Dhabi, 2200 hours during daylight savings time (45:254).

Military Rank and Insignia. (25:335)

Colonel	Crown and 2 stars
Lt Colonel	Crown and 1 star

Major	Crown
Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Photography. No photographs of people should be taken without advance permission. Photographs of aerodromes prohibited (41:261).

Prohibited Items. Pornographic literature and narcotics (45:252).

Road Travel. The U.S. Embassy recommends no road travel between cities at night due to the possibility of attack from nomads (41:261).

Weights and Measures. British and American standard, also metric (see Appendix A) (45:253).

Airfield Summaries: United Arab Emirates

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about airfields in the United Arab Emirates over 4,000 feet long.

How to Use This Section

There are two ways to locate your airfield in this section:

1. If only an approximate deployment location is known, turn the page to Figure 10.2, Airfield Locations for the United Arab Emirates. Airfields are numbered consecutively from north to south. Determine the number of the airfield closest to your deployment location, then read

the description of that airfield in Table 10.2.

2. If the airfield name is known, turn directly to Table 10.2, Airfield Summary List for the United Arab Emirates. Page through the airfield summaries until you find your airfield.

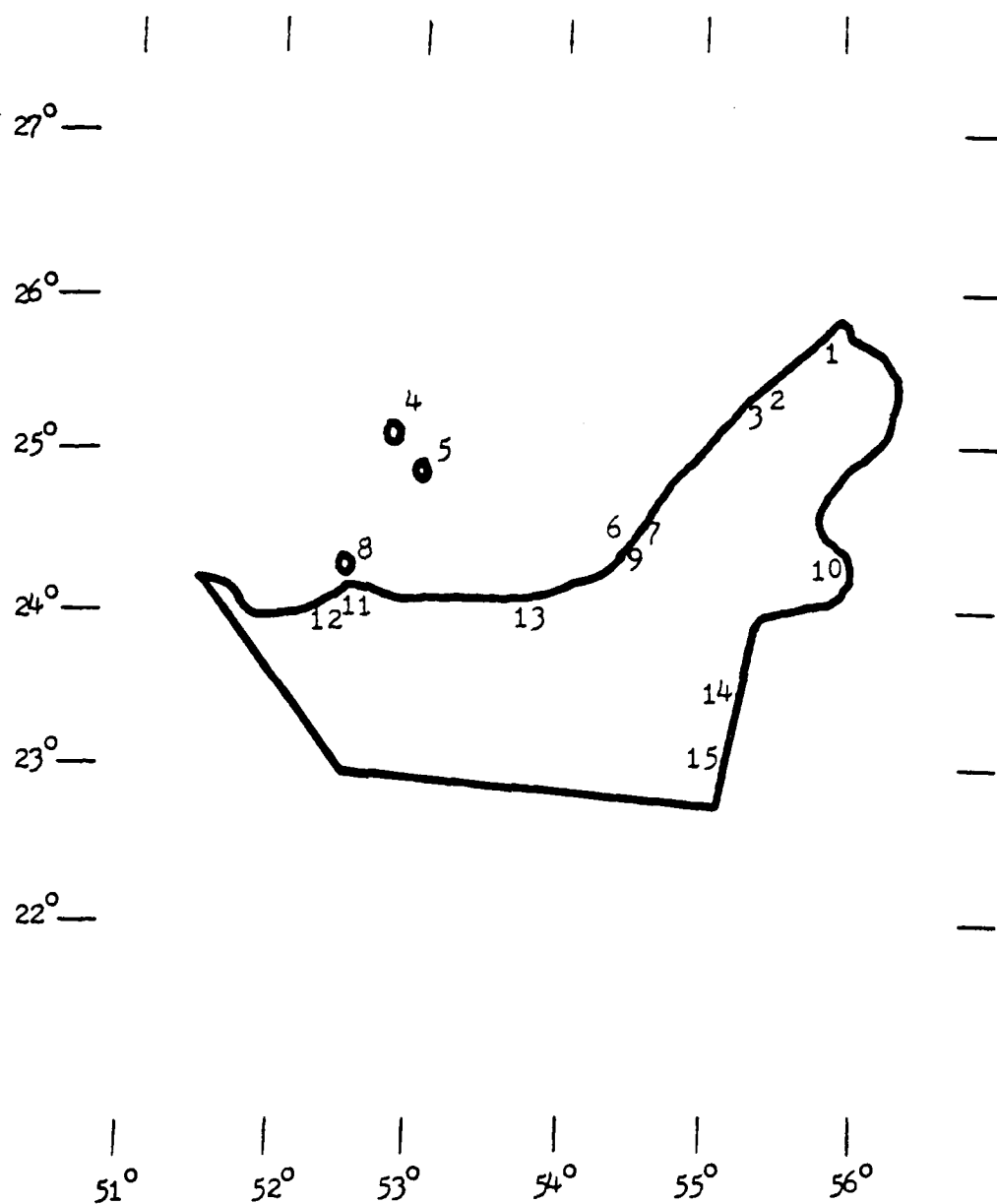


FIGURE 10.2
Airfield Locations for the UNITED ARAB EMIRATES

TABLE 10.2

Airfield Summary List for the UNITED ARAB EMIRATES

1. RAS AL KHAIMAH INTERNATIONAL

Location: 25°38'N 55°56'E (31)
 Users: no data
 Pavement: no data
 No. runways: 1 (8)
 Runway length: 13,000 ft estimate (31)
 Elevation: 102 ft (31)
 Local relief: sand dunes; 100-300 ft; mountains to the east
 10 miles (23:317; 34)
 Local veg: grasses, shrubs, or barren (15; 31)
 Nearby large cities: Dubayy, pop. 60,000, 40 miles southwest
 (23:I-25; 31)

2. SHARJAH INTERNATIONAL

Location: 25°20'N 55°31'E (37:B242)
 Users: civilian (37:B242)
 Pavement: asphalt (37:B242)
 No. runways: 1 (8)
 Runway length 12,300 ft (37:B242)
 Elevation: 109 ft (37:B242)
 Local relief: sand dunes, 100-300 ft (23:317; 31)
 Local veg: grasses, shrubs, or barren (15; 31)
 Nearby large cities: Dubayy, pop. 60,000, 10 miles east
 (23:I-25; 31)

3. DUBAI INTERNATIONAL

Location: 25°15'N 55°22'E (37:B76)
 Users: civilian (37:B76)
 Pavement: asphalt and concrete (37:B76)
 No. runways: 1 (8)
 Runway length: 12,500 ft (37:B76)
 Elevation: 25 ft (37:B76)
 Local relief: sand dunes; 100-300 ft (23:317; 34)
 Local veg: grasses, shrubs, or barren (15; 31)
 Nearby large cities: Dubayy, pop. 60,000, 5 miles east
 (23:I-25; 31)

TABLE 10.2 (cont.)

Airfield Summary List for the UNITED ARAB EMIRATES

4. DAS ISLAND

Location: 25°09'N 52°53'E (37:B70)
 Users: private (37:B70)
 Pavement: sand (37:B70)
 No. runways: 1 (8)
 Runway length: 3,500 ft (37:B70)
 Elevation: 12 ft (37:B70)
 Local relief: gravel; under 500 ft (30)
 Local veg: grasses, shrubs, or barren (15; 30)
 Nearby large cities: none. Note: this island is 65 miles
 north of the mainland (30)

5. AL ZARQA ISLAND

Location: 24°52'N 53°04'E (31)
 Users: no data
 Pavement: no data
 No. runways: 1 (31)
 Runway length: 4,500 ft estimate (31)
 Elevation: 10 ft (31)
 Local relief: under 500 ft (31)
 Local veg: grasses, shrubs, or barren (15; 31)
 Nearby large cities: none. Note: this island is 50 miles
 north of the mainland (31)

6. BATEEN INTERNATIONAL (Abu Dhabi)

Location: 24°26'N 54°28'E (37:B29)
 Users: civilian and military (37:B29)
 Pavement: asphalt (37:B29)
 No. runways: 1 (8)
 Runway length: 10,500 ft (37:B29)
 Elevation: 15 ft (37:B29)
 Local relief: sand dunes; 100-300 ft (23:317; 34)
 Local veg: grasses, shrubs, or barren (15; 31)
 Nearby large cities: Abu Zaby (Abu Dhabi), pop. 50,000, 10
 miles northwest (23:I-25; 31)

TABLE 10.2 (cont.)

Airfield Summary List for the UNITED ARAB EMIRATES

7. ABU DHABI NEW INTERNATIONAL

Location: 24°26'N 54°39'E (37:B3)
Users: civilian (37:B3)
Pavement: asphalt (37:B3)
No. runways: 1 (8)
Runway length: 13,400 ft (37:B3)
Elevation: 88 ft (37:B3)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: grasses, shrubs, or barren (15; 31)
Nearby large cities: Abu Zaby (Abu Dhabi), pop. 50,000, 20 miles east (23:I-25; 31)

8. YAS ISLAND

Location: 24°17'N 52°35'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,900 ft (30)
Elevation: 25 ft (34)
Local relief: under 500 ft; highest point on the island is 486 ft (30)
Local veg: grasses, shrubs, or barren (15; 34)
Nearby large cities: none. Note: this island is 5 miles from the mainland (34)

9. MUQATRA (Abu Dhabi Military)

Location: 24°17'N 54°32'E (31)
Users: no data
Pavement: no data
Runway length: 13,000 ft estimate (31)
No. runways: 1 (8)
Runway length: 13,000 ft estimate (31)
Elevation: 85 ft (31)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: grasses, shrubs, or barren (15; 31)
Nearby large cities: Abu Zaby (Abu Dhabi), pop. 50,000, 20 miles north (23:I-25; 31)

TABLE 10.2 (cont.)

Airfield Summary List for the UNITED ARAB EMIRATES

10. BURAYMI DAUDI

Location: 24°12'N 55°39'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 6,000 ft (34)
Elevation: 1,050 ft (34)
Local relief: under 300 ft; mountains to south and west
(23:317; 34)
Local veg: barren desert (15; 34)
Nearby large cities: none. Buraymi (town), 5 miles northwest
(23:I-25; 34)

11. JEBEL DHANA

Location: 24°11'N 52°36'E (37:B126)
Users: private (37:B126)
Pavement: asphalt (37:B126)
No. runways: 1 (8)
Runway length: 7,200 ft (37:B126)
Elevation: 30 ft (37:B126)
Local relief: 100-300 ft (23:317; 34)
Local veg: grasses, shrubs, or barren (15; 34)
Nearby large cities: none (23:I-25; 34)

12. AL HAMRA AUX

Location: 24°04'N 52°28'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,000 ft estimate (34)
Elevation: 50 ft (34)
Local relief: 100-300 ft (23:317; 34)
Local veg: grasses, shrubs, or barren (15; 34)
Nearby large cities: none (23:I-25; 34)

TABLE 10.2 (cont.)

Airfield Summary List for the UNITED ARAB EMIRATES

13. TARIF

Location: 24°02'N 53°45'E (34)
Users: no data
Pavement: no data
No. runways: 3 (8)
Runway length: 7,100 ft (34)
Elevation: 5 ft (34)
Local relief: 100-300 ft (23:317; 34)
Local veg: grasses, shrubs, or barren (15; 34)
Nearby large cities: Abu Zaby (Abu Dhabi), pop. 50,000, 80
miles northeast (23:I-25; 34)

14. FAIHA

Location: 23°22'N 55°00'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 5,300 ft (34)
Elevation: 490 ft (34)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert (15; 34)
Nearby large cities: none (23:I-25; 34)

15. MANADIR

Location: 23°01'N 54°59'E (34)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: 4,900 ft (34)
Elevation: 290 ft (34)
Local relief: sand dunes; 100-300 ft (23:317; 34)
Local veg: barren desert (15; 34)
Nearby large cities: none (23:I-25; 34)

CHAPTER XI

DEPLOYMENT LOCATION SPECIFIC INFORMATION: QATAR

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Qatar. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Qatar. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, and the work week. The last part of the chapter contains airfield summaries of the two airfields in Qatar large enough to support a contingency flying mission.

How to Use This Chapter

The purpose of this first section is to provide information that generally applies to the entire country. The second section contains specific information about the two airfields. Read the entire first section, then read the applicable airfield summary.

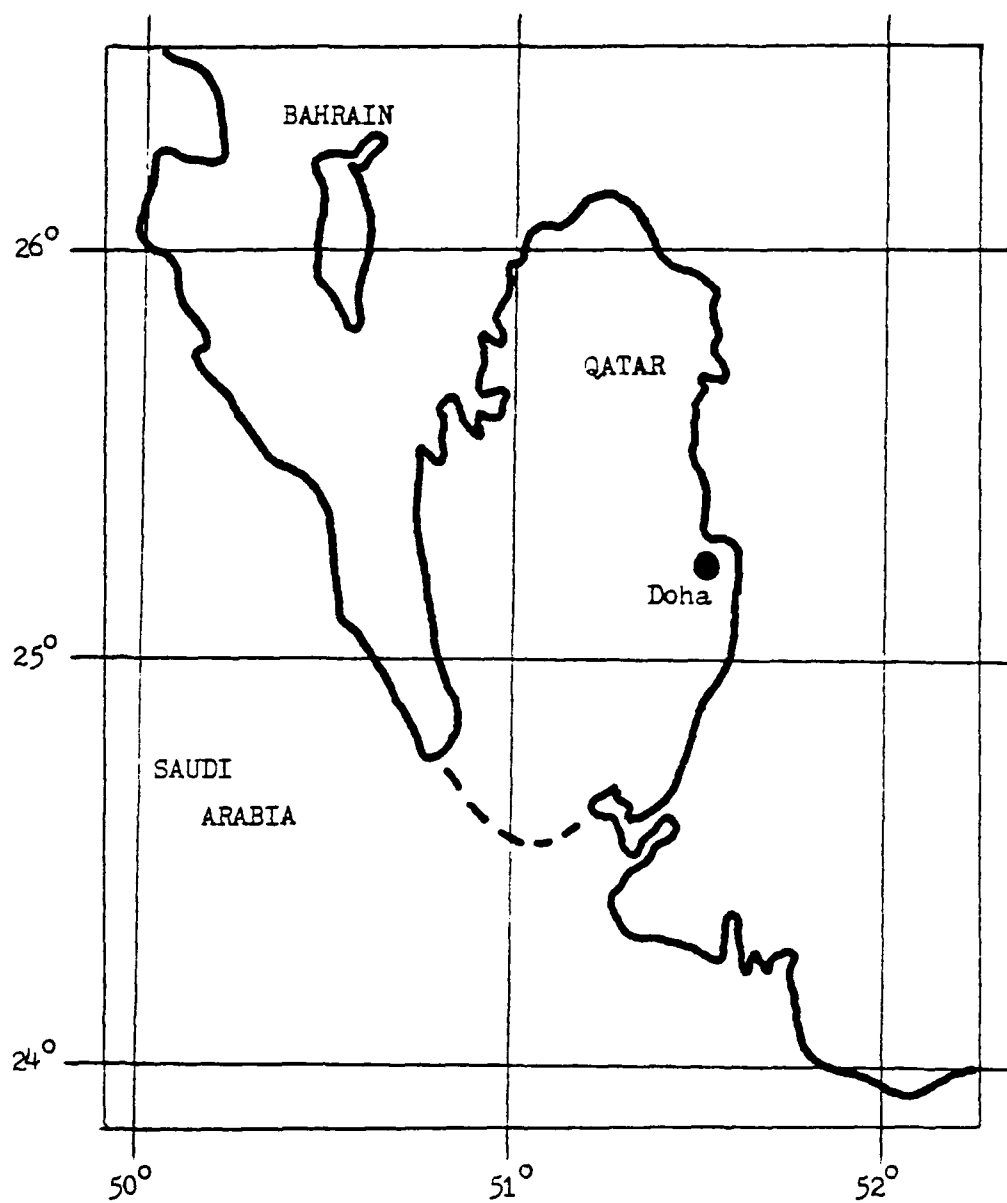


FIGURE 11.1

Map of QATAR with Latitude and Longitude References

Demographic and Geographic Background: Qatar

Geography

Qatar is a small country located on a peninsula surrounded to the west, north, and east by the Persian Gulf. It is only 100 miles long north to south, and 50 miles wide east to west. It consists mostly of flat desert covered with loose sand, pebbles, and occasional limestone outcroppings (25:238).

Roads

There are about 600 miles of roads on the peninsula, most of which connect to Doha (DOE-hah). The road system is fairly well developed, with 200 miles of hard surfaced road (25:238).

Population, Sanitation, Health Hazards

The single major city in Qatar, Doha, has a population of 150,000 (45:178). The greatest health hazard to Prime BEEF team members is the intense heat and humidity (25:239). A large part of the potable water in Qatar comes from desalination plants (25:239).

Religion and Culture

Qatar is generally classified as a conservative Muslim state, although women can drive (45:184). Alcohol is severely restricted, and most inhabitants are politically sensitive (16:14). Prime BEEF team members should not discuss politics with native Arabs.

Climate

The climate in Qatar is generally dry and hot in the long summer, and pleasant during the short winter. Rainfall averages less than 5 inches per year (25:239). During the summer months, the average high temperature is over 40°C (105°F), and the average low temperature is over 27°C (81°F). In January, the average high temperature is 21°C (70°F), and the average low temperature is 12°C (53°F) (49:197). Humidity normally falls between 60 and 70 percent October through February, and 30 to 50 percent April through September. However, periods of very high humidity are common during the summer (25:239).

Briefing Notes for Qatar

Electric Supply. 240/415V AC 50 Hz. Plugs are 3 flat pins (45:182).

Fixed Holidays. (Julian calendar) (45:183).

22 Feb Accession of the Amir

3 Sep Independence Day

Local Time. Greenwich Mean Time plus 3 hours (4 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2000 hours in Qatar, 2100 hours during daylight savings time (45:183).

National Defense Force. The national defense force is small and includes mercenaries (25:269).

Prohibited Items. Alcoholic beverages (45:179).

Weights and Measures. Metric with some imperial (see Appendix A) (45:182).

Work Week. The work week in Qatar is Saturday through Wednesday (41:184).

Airfield Summaries: Qatar

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about the two airfields in Qatar over 4,000 feet long. Turn the page to find the location of the airfields in Figure 11.2. Then, read the airfield description of your airfield in Table 11.1.

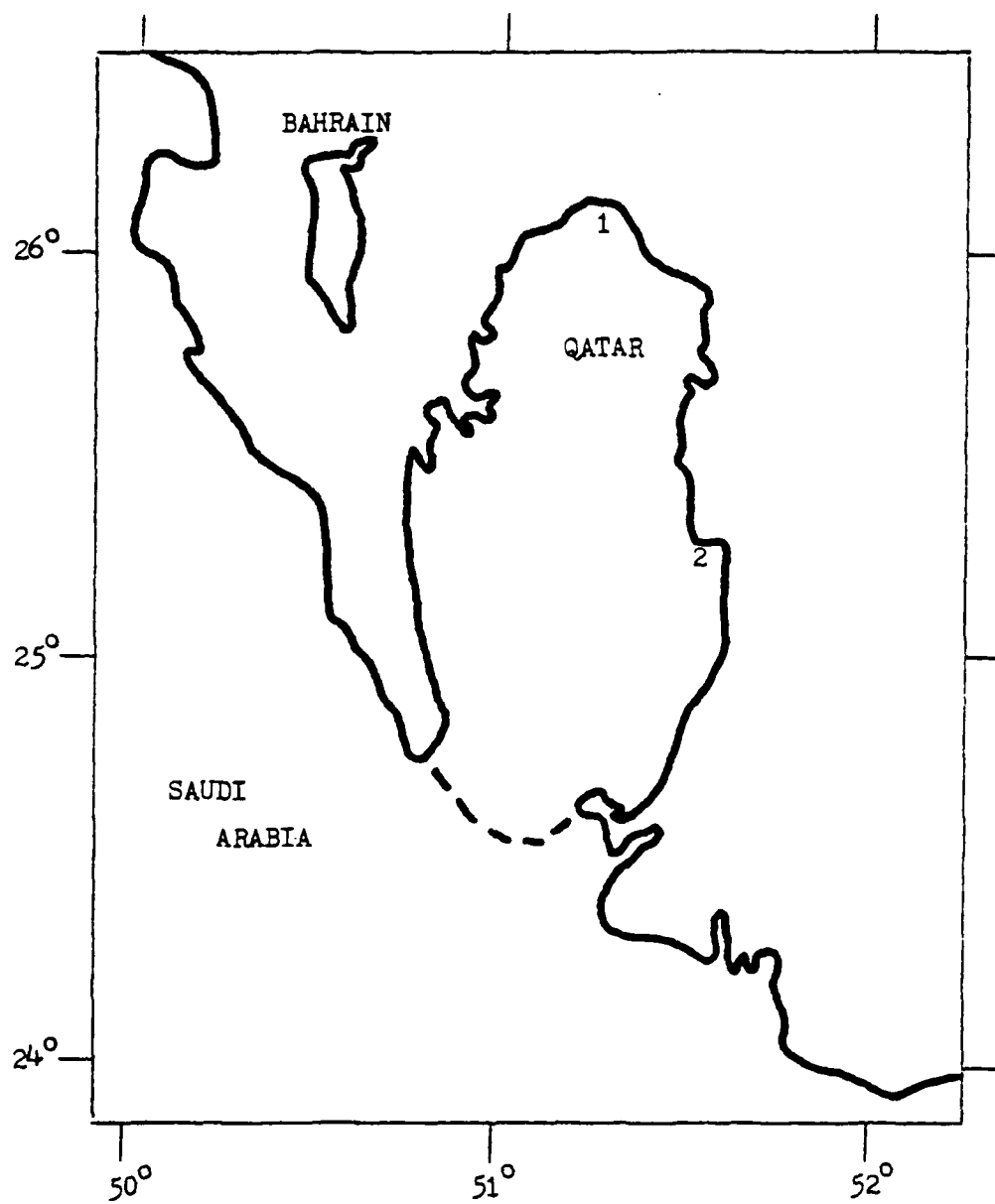


FIGURE 11.2
Airfield Locations For QATAR

TABLE 11.1

Airfield Summary List for QATAR

1. AL GHARIYEH

Location: 26°12'N 51°20'E (11)
Users: no data
Pavement: no data
No. runways: 1 (8)
Runway length: over 4,000 ft (8)
Elevation: 7 ft (11)
Local relief: under 100 ft (23:317; 30)
Local veg: shrubs, cactus, desert; marshes (15; 30)
Nearby large cities: Doha, pop. 95,000, 50 miles south
(23:1-23; 30)

2. DOHA INTERNATIONAL

Location: 25°16'N 51°34'E (37:B75)
Users: civilian (37:B75)
Pavement: asphalt (37:B75)
No. runways: 1 (8)
Runway length: 15,000 ft (37:B75)
Elevation: 35 ft (37:B75)
Local relief: under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 23:319)
Nearby large cities: Doha, pop. 95,000, 2 miles north
(23:I-23; 30)

CHAPTER XII

DEPLOYMENT LOCATION SPECIFIC INFORMATION: BAHRAIN

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Bahrain. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Bahrain. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, Bahrain army rank and insignia, and other information about Bahrain. The last part of the chapter contains an airfield summary of the one airfield in Bahrain large enough to support a contingency flying mission.

How to Use This Chapter

The purpose of this first section is to provide information that generally applies to the entire country. The second section contains specific information about Bahrain's only airfield. Read the entire first section, then read the airfield summary at the end of the chapter.

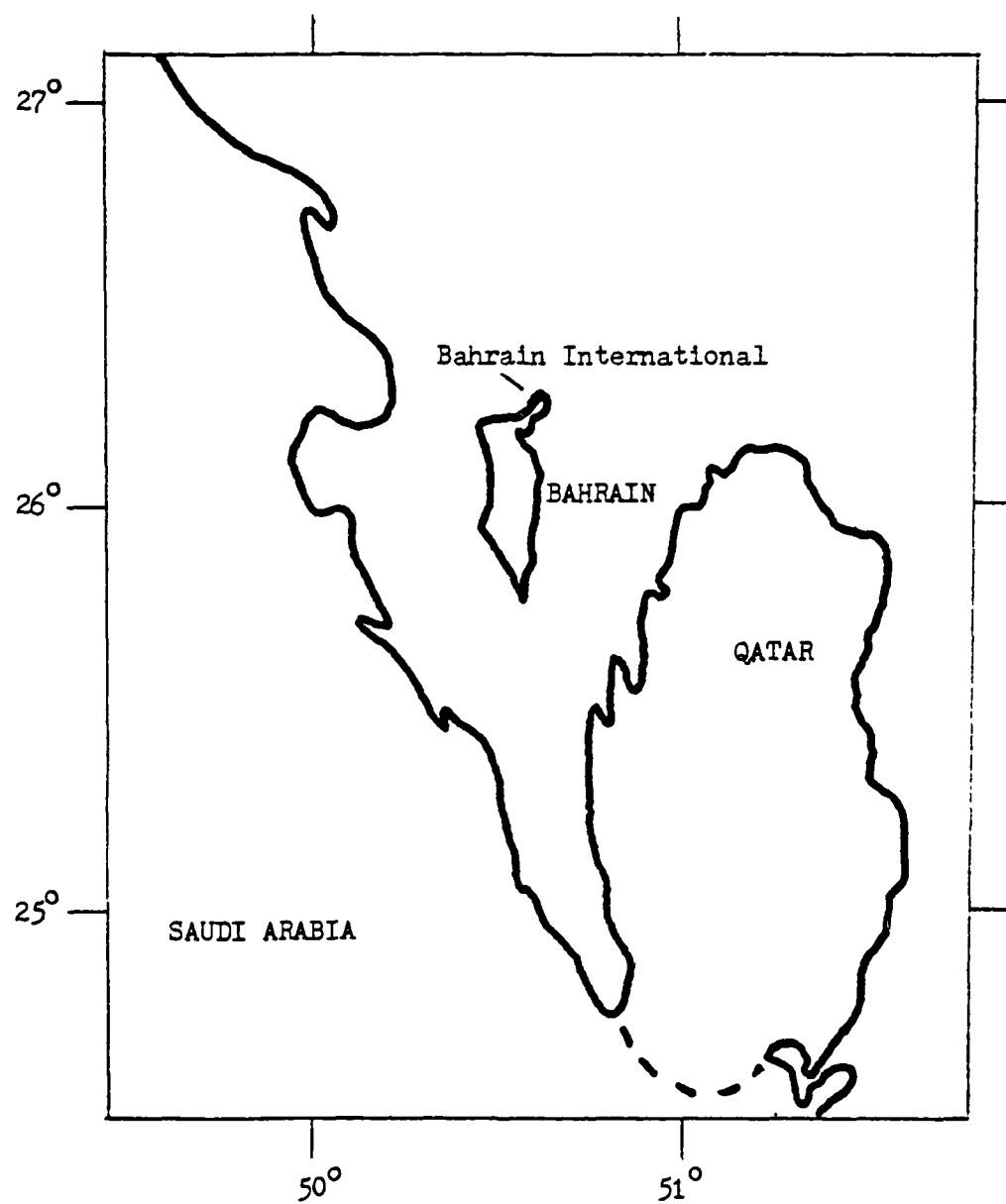


FIGURE 12.1

Map of BAHRAIN with Latitude and Longitude References

Demographic and Geographic Background: Bahrain

Geography

Bahrain is an island country. It consists of 33 islands with a total land area of 255 square miles (25:208). The main island is 30 miles long and 10 miles wide. A causeway links the main island with the largest city, Manama (mah-NAH-mah). There are no year-around streams on any of the islands (25:209).

Roads

Bahrain has good roads on the major islands. Most are paved, and there are stretches of dual highway (25:208).

Population, Sanitation, Health Hazards

The major cities of Bahrain are Manama, population 95,000, and Muharraq (moo-HAR-ik), 55,000 (45:33).

The greatest health hazards to Prime BEEF team members are contaminated water and heat (41:17). The tap water in Bahrain is high in salts and minerals, and the hot, humid summer weather may irritate respiratory problems (41:17).

Religion and Culture

Bahrain is a moderate-to-liberal Arab country. Alcohol can be purchased in retail shops, and segregation of the sexes is not strongly enforced (45:39). Most other Muslim customs outlined in Chapter IV are

adhered to. The people of Bahrain are politically sensitive. Prime BEEF team members should not discuss politics with native Arabs (16:14).

Climate

The climate in Bahrain is pleasant from October through April, but hot and humid June through September. In the summer months, temperatures over 40°C (105°F) are normal. Average rainfall is less than 4 inches per year (25:209).

Briefing Notes for Bahrain

Customs. Liquor without a license, and any items made in Israel are prohibited (41:17).

Electric Supply. 230V ZC 50 Hz (Awali: 120V AC 50 Hz). Plugs have 3 flat pins (45:37).

Fixed Holidays. (Julian calendar) (45:37).

1 Jan New Year's Day

16 Dec Ruler's Accession Day

Local Time. Greenwich Mean Time plus 3 hours (4 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2000 hours in Bahrain, 2100 hours during daylight savings time (45:38).

Military Rank and Insignia. (25:233)

Colonel	Eagle and 2 stars
Lt Colonel	Eagle and 1 star
Major	Eagle

Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Photography. DO NOT photograph local women or enter Arab places of worship (41:17).

Prohibited Items. (45:36)

1. Cultured, bleached, or undrilled pearls produced outside the Persian Gulf.
2. Pornographic literature.

Weights and Measures. Metric system (see Appendix A) (45:37).

Airfield Summary

Facts about Bahrain International Airport, the only airfield in Bahrain large enough to support a contingency flying mission, are summarized below:

1. BAHRAIN INTERNATIONAL (Bahrain/Muharraq)

Location: 26°16'N 50°38'E (37:B24)
 Users: civilian (37:B24)
 Pavement: asphalt and concrete (37:B24)
 No. runways: 1 (8)
 Runway length: 13,200 ft (37:B24)
 Elevation: 6 ft (37:B24)
 Local relief: under 100 ft; airfield located on a small island attached to the main island by a causeway (23:317; 30)
 Local veg: shrubs, cactus, grasses; desert (15; 30)
 Nearby large cities: Al Manamah, pop. 145,000, 6 miles southwest (23:I-16; 30)

CHAPTER XIII

DEPLOYMENT LOCATION SPECIFIC INFORMATION: KUWAIT

Chapter Overview

This chapter builds on the general information in Chapter IV with more specific information about Kuwait. The first part of the chapter contains a brief description of demographic, geographic, cultural, and climatic information about Kuwait. This is followed by a short section containing information about prohibited articles, electric supply, weights and measures, holidays, time change, and Kuwaiti rank and insignia. The last part of the chapter contains airfield summaries of the three airfields in Kuwait large enough to support a contingency flying mission.

How to Use This Chapter

The purpose of this section is to provide information that generally applies to the entire country. Read the entire section, then read the airfield summary of the airfield closest to your deployment location.

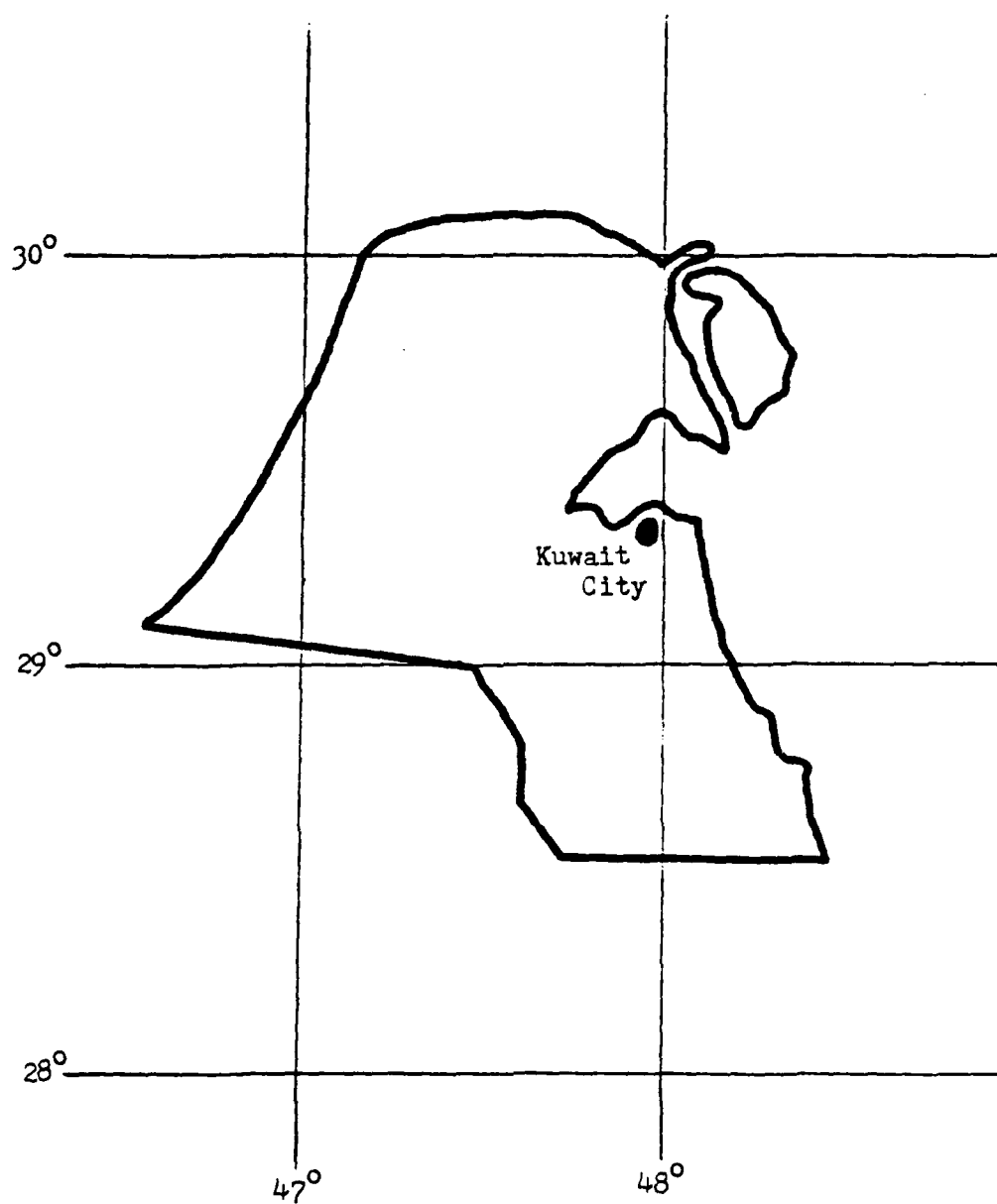


FIGURE 13.1

Map of KUWAIT with Latitude and Longitude References

Demographic and Geographic Background: Kuwait

Geography

Located at the northwest corner of the Persian Gulf, Kuwait is generally flat sand or gravel desert, with some low hills (25:123). The only trees grow around villages; some flowers and shrubs may grow in the desert, but they die and are covered with sand by June of each year (25:123). There are no permanent streams in Kuwait, and the main water source is government desalination plants. These plants provided 75 percent of all potable water in the country by the early 1970's (25:125).

Roads

Although there are few roads in the interior of the country, trunk roads connect the three airfields with the city of Kuwait. The majority of roads in the country are located south of the city of Kuwait along the coast. One trunk road leads north out of the country into Iraq (25:120).

Population, Sanitation, Health Hazards

The two major cities in Kuwait are the city of Kuwait, population 700,000, and Hawalli (hah-WALL-ee), 130,000.

The greatest health hazards to Prime BEEF team members are contaminated water and fresh fruits or vegetables. Water from a local source should be purified or boiled, and fresh produce purchased locally should be soaked in a chlorine solution before eating (41:123).

Religion and Culture

Kuwait is a very conservative Muslim country. Veils on women are common, strict segregation of the sexes is enforced, and the consumption of alcohol is banned (45:128). The practice of using the right hand when giving or receiving should be strictly adhered to, and women should not be photographed (45:128).

Climate

The climate of Kuwait is very hot, sometimes humid in the summer, and cool and pleasant in the winter (49:126). Normal rainfall is between 3 and 6 inches per year (25:124). The normal high temperature in January is 19°C (67°F), and the normal low is 8°C (46°F). In July, the normal high temperature is 45°C (113°F), with a normal low of 29°C (85°F) (49:126). Relative humidity averages 60 percent from November through February, and around 30 percent from May through September, although intense humidity often occurs in August (49:126; 25:123). Dust storms are prevalent during the summer months (25:123).

Briefing Notes for Kuwait

Electric Supply. 220V AC 50 Hz; plugs are 3 flat pins or 2 or 3 pin continental (45:126).

Fixed Holidays. (Julian calendar) (45:127).

1 Jan	New Year's Day
25 Feb	Kuwait National Day

Local Time. Greenwich Mean Time plus 3 hours (4 hours if U.S. is on daylight time). When it is 1200 hours in New York, it is 2000 hours in Kuwait, 2100 hours during daylight savings time (45:127).

Military Rank and Insignia. (25:198)

Colonel	Crown and 2 stars
Lt Colonel	Crown and 1 star
Major	Crown
Captain	3 stars
1 Lt	2 stars
2 Lt	1 star

Prohibited Items. (45:126)

1. Alcohol.
2. Pork.
3. Pornographic literature.

Weights and Measures. Metric system (see Appendix A) (45:126).

Airfield Summaries: Kuwait

The rest of this chapter consists of individual airfield summaries. These summaries contain specific information about the three airfields in Kuwait over 4,000 feet long. Turn the page to find the location of these airfields in Figure 13.2. Then, read the airfield description of your airfield in Table 13.1.

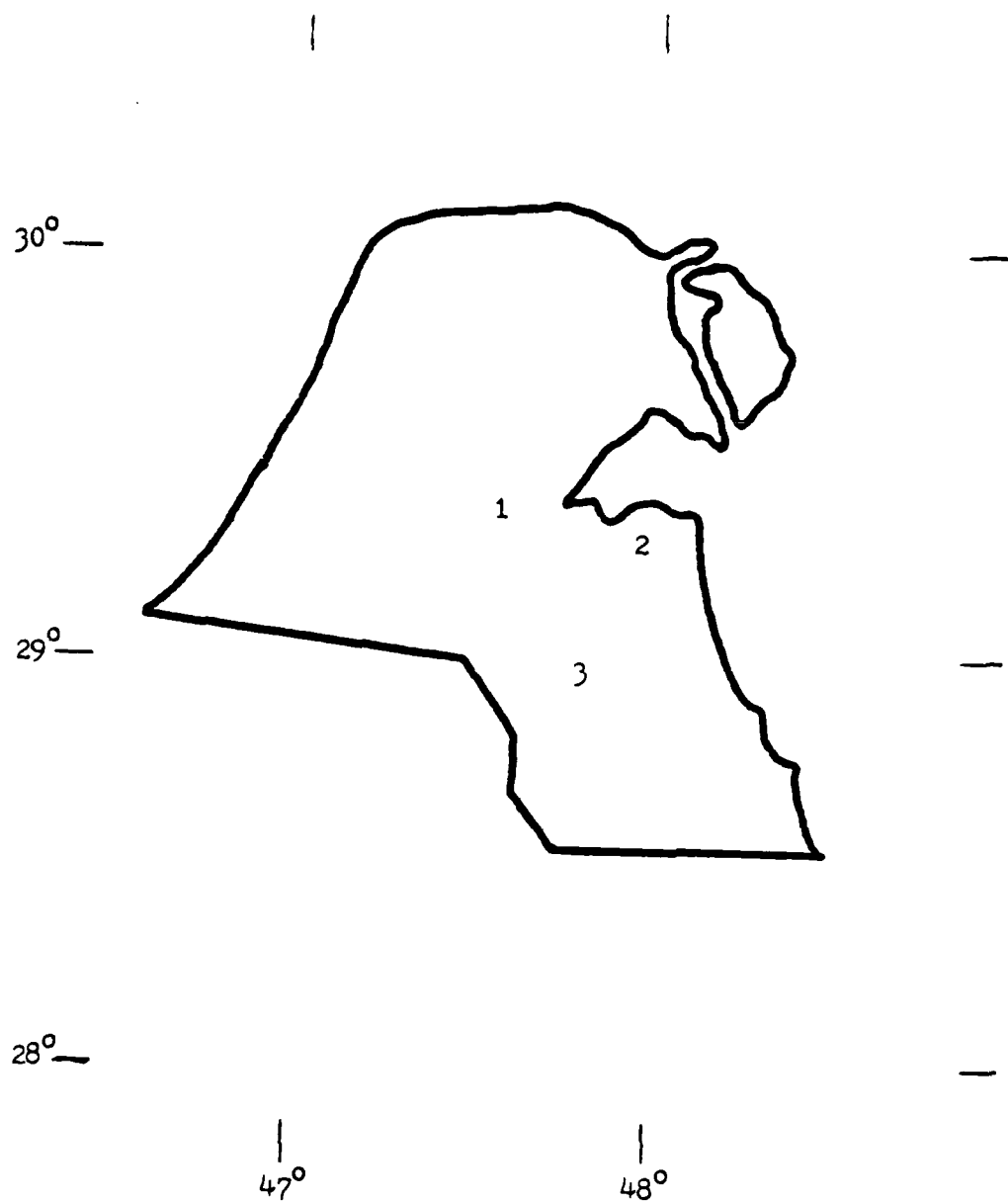


FIGURE 13.2
Airfield Locations for KUWAIT

TABLE 13.1

Airfield Summary List for KUWAIT

1. ALI AL SALEM AIR BASE (Kuwait West)

Location: 29°21'N 47°31'E (30)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 12,000 ft estimate (30)
Elevation: 495 ft (11)
Local relief: level plains; under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Kuwait, pop. 780,000, 30 miles east
(23:I-21; 30)

2. KUWAIT INTERNATIONAL

Location: 29°14'N 47°59'E (37:B144)
Users: military and civilian (37:B144)
Pavement: concrete (37:B144)
No. runways: 2 (8)
Runway length: 11,000 ft (37:B144)
Elevation: 189 ft (37:B144)
Local relief: under 100 ft (23:317; 30)
Local veg: shrubs, cactus, grasses; desert (15; 30)
Nearby large cities: Kuwait, pop. 780,000, 5 miles north
(23:I-21; 30)

3. AHMED AL JABAR AIR BASE (Kuwait Main Base)

Location: 28°56'N 47°47'E (30)
Users: no data
Pavement: no data
No. runways: 2 (8)
Runway length: 12,000 ft estimate (30)
Elevation: 495 ft (30)
Local relief: 100-300 ft (23:317; 30)
Local veg: shrubs, cactus, grasses, or barren; desert
(15; 30)
Nearby large cities: Kuwait, pop. 780,000, 30 miles northeast
(23:I-21; 30)

APPENDICES TO THE MANUAL

APPENDIX A
METRIC/IMPERIAL WEIGHTS, MEASURES, AND
TEMPERATURE CONVERSION TABLES

LENGTH

Inches - Centimeters

1	2.54
2	5.08
3	7.62
4	10.16
5	12.70
6	15.24
7	17.78
8	20.32
9	22.86
10	25.40

(Adapted from 45:276)LENGTH

Yards - Meters

1	0.914
2	1.829
3	2.743
4	3.658
5	4.572
6	5.486
7	6.401
8	7.315
9	8.230
10	9.144

(45:276)LENGTH

Miles - Kilometers

1	1.609
2	3.219
3	4.826
4	6.437
5	8.047
6	9.656
7	11.266
8	12.875
9	14.484
10	16.094

(45:276)AREA

Sq. Miles - Sq. Kilometers

1	2.59
2	5.18
3	7.77
4	10.36
5	12.95
6	15.54
7	18.13
8	20.72
9	23.31
10	25.90

(Adapted from 45:276)CAPACITY

US Gallons - Liters

1	3.785
2	7.571
3	11.356
4	15.141
5	18.927
6	22.712
7	26.497
8	30.282
9	34.068
10	37.853

(Adapted from 45:277)WEIGHT

Pounds - Kilograms

1	0.454
2	0.907
3	1.361
4	1.814
5	2.268
6	2.722
7	3.175
8	3.629
9	4.082
10	4.536

(Adapted from 45:278)VOLUME

Cu. Yards - Cu. Meters

1	0.765
2	1.529
3	2.294
4	3.058
5	3.823
6	4.587
7	5.352
8	6.116
9	6.881
10	7.646

(Adapted from 45:278)

TEMPERATURES

°F - °C

32	0.0
33	0.6
34	1.1
35	1.7
36	2.2
37	2.8
38	3.3
39	3.9
40	4.4
41	5.0
42	5.6
43	6.1
44	6.7
45	7.2
46	7.8
47	8.3
48	8.9
49	9.4
50	10.0
51	10.6
52	11.1
53	11.7
54	12.2
55	12.8
56	13.3
57	13.9
58	14.4
59	15.0
60	15.6
61	16.1
62	16.7
63	17.2
64	17.8
65	18.3
66	18.9
67	19.4

°F - °C

68	20.0
69	20.6
70	21.1
71	21.7
72	22.2
73	22.8
74	23.3
75	23.9
76	24.4
77	25.0
78	25.6
79	26.1
80	26.7
81	27.2
82	27.8
83	28.3
84	28.9
85	29.4
86	30.0
87	30.6
88	31.1
89	31.7
90	32.2
91	32.8
92	33.3
93	33.9
94	34.4
95	35.0
96	35.6
97	36.1
98	36.7
99	37.2
100	37.8
101	38.3
102	38.9
103	39.4

°F - °C

104	40.0
105	40.6
106	41.1
107	41.7
108	42.2
109	42.8
110	43.3
111	43.9
112	44.4
113	45.0
114	45.6
115	45.6
116	46.8
117	47.3
118	47.8
119	48.3
120	48.9
121	49.4
122	50.0
123	50.6
124	51.1
125	51.7
126	52.2
127	52.8
128	53.3
129	53.9
130	54.4
131	55.0
132	55.6
133	56.1
134	56.7
135	57.2
136	57.8
137	58.3
138	58.9
139	59.4

(Adapted from 45:279)

APPENDIX B

AIRCRAFT PERFORMANCE INFORMATION FOR THE
F-4C, F-4D, F-4E/G, A-10, F-15A/B, AND F-16A/B

This appendix contains aircraft performance information compiled by the Air Force Civil Engineering and Services Center. Aircraft included are the F-4C, F-4D, F-4E/G, A-10, F-15A/b, and the F-16A/B. All measurements are given in feet. Explanations of aircraft performance information follow:

WING SPAN. The horizontal distance from wing tip to wing tip or between ends of assessor equipment extending laterally beyond wing tips.

LENGTH. The horizontal distance from nose to tail including radomes and/or antennae.

HEIGHT. The vertical distance from ground level to the top of the vertical stabilizer.

180° TURN. Minimum width of unobstructed circular area required for execution of a 180° turn. This width is determined by measuring the horizontal distance from the pivot point to the farthest point of the aircraft as it executes the turn.

BASIC MISSION TAKE-OFF GROSS WEIGHT. The maximum take-off gross weight for the basic or primary mission of the aircraft. The performance capabilities indicated are based on this gross weight.

TAKE-OFF DISTANCE, GROUND ROLL. The ground roll required for the basic mission take-off gross weight using standard operation procedures, on a hard surface runway at standard sea level with no wind.

TAKE-OFF DISTANCE TO CLEAR A 50 FOOT OBSTACLE. The horizontal distance required from brake release to clearance of a 50 foot obstacle, for the basic mission take-off gross weight, on a hard surface runway at standard sea level, with no wind, using standard operating procedures. For estimated take-off data, the horizontal distance to clear a 50 foot obstacle is predicated on a lift-off speed of 120 percent of power-off stall.

LANDING DISTANCE; GROUND ROLL. The landing ground roll required for the basic mission landing gross weight.

LANDING DISTANCE TO CLEAR A 50 FOOT OBSTACLE. The ground distance required to land after clearing a 50 foot obstacle, based on basic mission landing gross weight. This distance is predicated on a hard surfaced runway at standard sea level, with no wind, using standard operating procedures.

AIRCRAFT DIMENSIONS AND TURNING DIAMETERS

<u>Aircraft Type</u>	<u>Wing Span</u>	<u>Length</u>	<u>Height</u>	<u>180° Turn</u>
A-10	58 ft	54 ft	16 ft	87 ft
F-4C	39 ft	59 ft	17 ft	58 ft
F-4C	39 ft	63 ft	17 ft	58 ft
F-4E/G	39 ft	63 ft	17 ft	77 ft
F-15A/B	43 ft	64 ft	19 ft	83 ft
F-16A/B	33 ft	50 ft	17 ft	78 ft

(Adapted from 21)

AIRCRAFT PERFORMANCE CHARACTERISTICS

<u>Aircraft Type</u>	<u>Take-Off, Ground Roll</u>	<u>Take-Off, Clear 50 ft</u>	<u>Landing, Ground Roll</u>	<u>Landing, Clear 50 ft</u>
A-10	4,000 ft	4,850 ft	1,500 ft	3,200 ft
F-4C	3,520 ft	4,850 ft	3,520 ft	5,430 ft
F-4D	3,760 ft	5,840 ft	3,760 ft	5,670 ft
F-4E/G	3,780 ft	5,880 ft	3,780 ft	5,670 ft
F-15A/B	2,500 ft	3,500 ft	3,600 ft	4,400 ft
F-16A/B	3,225 ft	5,000 ft	3,200 ft	4,590 ft

(Adapted from 21)

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CHAPTER XIV

CONCLUSIONS AND RECOMMENDATIONS

Chapter Overview

This chapter states conclusions that can be drawn from research to compile a manual of information for Prime BEEF team deployment. Conclusions are presented first, followed by recommendations.

Specific Conclusions

Conclusions to this study are really "lessons learned" during the course of collecting data and devising a format to present the data. The following is a summary of conclusions drawn from this research.

1. The need for information manuals like this one is even greater than the author originally perceived. Much of the information needed by Prime BEEF team members is available in unclassified sources, but distributed through so many different publications that it could not possibly be assembled on short notice.

2. As Chapters IV-XIII demonstrate, it was possible to meet the thesis research objectives stated in Chapter I. Nevertheless, gaps exist between some types of information required for Prime BEEF deployment and information available. Categories of site-specific information required by Prime BEEF team members to operate efficiently when deployed were identified as explained in Chapter III. Information about these topics was collected from unclassified sources for specific, possible

Prime BEEF deployment sites and a field manual format was designed to transmit the information for rapid use under deployment conditions (Chapters IV through XIII). It is highly desirable that the contents of this unclassified manual be supplemented by additional site-specific engineering information: topics such as fuels, electrical distribution systems, and building types and locations will be needed by Prime BEEF teams. These topics are customarily classified, and so had to be omitted because of the time and academic constraints of this thesis. Their absence, while not a deficiency in the thesis, is nonetheless a limitation of the manual.

3. For all academic efforts like this one, a time comes when the data base must be closed and the manual compiled. Subsequently, other sources of information become available or become known to the compiler. Such was the case in this project, and it is reasonable to conclude that no manual compiled on a dynamic topic such as Prime BEEF will ever reach an absolutely closed or finished condition.

4. This manual could be improved by adding a classified supplement containing information about facilities, equipment, and supplies located at possible Prime BEEF deployment sites. A single source of this classified information, compiled for the purpose of assisting Prime BEEF team members, would be easier to distribute to all CONUS bases than fragments of classified information contained in many different sources. There are, however, at least two drawbacks to a classified supplement. First, since the amount of equipment and supplies located at overseas bases is subject to change, the supplement would require updating more

often than the unclassified manual. Second, providing a classified supplement to each CONUS base presents security and logistical problems for the distributing agency as well as the base level readiness section.

5. Information about facilities, equipment, and supplies located at possible Prime BEEF deployment sites, as contained in a classified supplement, would be valuable for Prime BEEF teams to have prior to deployment. This information, combined with information provided by the deployment notification about the employment Prime BEEF mission (i.e., force beddown, rapid runway repair), would enable team leaders to make judgements about taking additional equipment and supplies (beyond the required items) that could greatly improve the team's effectiveness at the deployment location. In the opinion of the author, the current lack of availability of this information will likely cause Prime BEEF teams to deploy without important equipment or supplies, available at the home CONUS base, but not taken because they were excess to the required items.

6. Similarly, research for this project showed that unclassified maps provide a wealth of engineering related information. For example, ground navigation maps published by the Defense Mapping Agency contain information about roads, airfield layout, large buildings, landmarks, geographic features, elevation and relief, soil type, vegetation, and other information useful to engineers.

7. Some of the data in this manual must be updated periodically. Of special concern are newly constructed airfields. Data on new airfields should be included as soon as it is available, because new

airfields are more likely to support a Prime BEEF deployment due to their stronger runway design and modern facilities.

Specific Recommendations

1. Manuals like this should be compiled for other geographic areas worldwide. This task should be coordinated by the Air Force Engineering and Services Center so that the resulting manuals can be approved and distributed properly.

2. Additional information contained in standard tactical maps (ground navigation) published by the Defense Mapping Agency should be added to the individual airfield summaries in this manual. These maps are described in the Defense Mapping Agency (DMA) catalog, normally available at Base Operations. DMA publications may be ordered on a Multi-Purpose Requisitioning Form, SF 344, submitted to the following address:

DMA/ODS
Attn DDCP
Washington, DC 20315

Orders should include the unit DMA account number (available from base operations). The AUTOVON number for this office is 287-2495.

3. A complete set of Operational Navigation Charts (ONC) should be obtained for every CONUS base Prime BEEF reference library in order to provide Prime BEEF team leaders with information about the deployment site prior to team departure. These charts can be ordered from the Defense Mapping Agency.

4. Classified information currently available about facilities at overseas deployment locations should be reviewed with the host nation to determine whether some information useful to Prime BEEF team members, currently classified, can be declassified.

5. The remaining data that must be classified should be compiled into a classified supplement to this and other regional manuals, or into one classified document covering probable deployment sites. Alternately, classified information could be added to this manual by rendering it generic rather than site-specific. The regions and/or zones developed for this manual would be an effective basis for generic data. For example, equipment and supplies available to support a deployment to Egypt, Zone B, could be listed without mentioning the specific location of these assets. This information should then be added to the manual.

6. CONUS Prime BEEF teams should obtain copies of the Automated Airfield Information File (AAFIF) to supplement this manual. The AAFIF is compiled in a classified and unclassified version, and contains airfield facilities information useful to Prime BEEF teams. The source of this document is:

DMAAC/ADPA
St. Louis AFS, MO 63118

The AUTOVON number for this office is 693-8372.

7. This manual should be reviewed and updated every two years. This task could be handled by one person in a two-week period, and should be coordinated by the Air Force Engineering and Services Center.

8. As a possibility for follow-on thesis work, this data base, expanded, could be used to generate a computer graphics "picture" of the specific deployment location. There are two steps involved for this: first, the data available on possible Prime BEEF deployment sites must be collected and stored in a computer data base. Second, this information must be used to generate the computer graphics "picture" of the deployment location. The master's thesis by Captain Jay Carson, USAF, and Captain Bruce Nadler, USAF, entitled "Consolidation of Contingency Data and its use in Computer Graphics to Plan Bare Base Facility Construction at a Forward Operating Location," (Wright-Patterson AFB, OH: Air Force Institute of Technology, 1983, LSSR 41-83), contains a computer program to support this recommendation.

SELECTED BIBLIOGRAPHY

1. Armour, Major Harold M., USAF. Instructor, School of Civil Engineering, Air Force Institute of Technology, Wright-Patterson AFB OH. Personal interview. 9 February, 1983.
2. Axon, Anthony, and David C. Jamieson. Gulf Guide & Diary, 1983. Saffron Walden, England: Middle East Review Company Limited, 1982.
3. Bagnouls, F., and H. Gaussen. Vegetation Map of the Mediterranean Region (Western Sheet). F.A.O. U.N.E.S.C.O., 1968.
4. Encyclopedia Americana, International Edition, Vol. 14. Danbury, Connecticut: Grolier Incorporated, 1982.
5. Eng, Captain Fred. Contingency Plans Staff Officer, Air Force Engineering and Services Center, Tyndall AFB FL. Telephone interview, 2 February 1981.
6. Fisher, W. B., and others. The Middle East and North Africa, 1982-83. London: Europa Publications Limited, 1982.
7. Global Navigation Chart, GNC-11. St. Louis: Defense Mapping Agency Aerospace Center, 2 Jun 1980.
8. Global Navigation Chart, GNC-12. St. Louis: Defense Mapping Agency Aerospace Center, 8 Feb 1982.
9. Griffiths, J. F., ed. World Survey of Climatology, Volume 10: Climates of Africa. Amsterdam: Elsevier Publishing Company, 1972.
10. Jet Navigation Chart, JNC-34. St. Louis: Defense Mapping Agency Aerospace Center, 4 May 1976.
11. Jet Navigation Chart, JNC-35. St. Louis: Defense Mapping Agency Aerospace Center, 9 Jan 1981.
12. Jet Navigation Chart, JNC-52. St. Louis: Defense Mapping Agency Aerospace Center, 4 Feb 1977.
13. Kabil, Colonel Magdi, Egyptian Army. Graduate Student, Air Force Institute of Technology, School of Engineering, Wright-Patterson AFB OH. Personal interview. 26 Jul 1983.
14. Laffin, John. The Arab Mind: A Need for Understanding. London: Cassel & Company Limited, 1975.
15. Lalande, P. Vegetation Map of the Mediterranean Region (Sheet East). F.A.O. U.N.E.S.C.O., 1968.
16. Lanier, Alison R. Update: Bahrain and Qatar. Chicago: Intercultural Press, Inc., 1978.

17. Lanier, Alison R. Update: Egypt. New York: Overseas Briefing Associates, 1979.
18. _____. Update: Kuwait. New York: Overseas Briefing Associates, 1978.
19. _____. Update: Saudi Arabia. Chicago: Intercultural Press, Inc., 1981.
20. _____. Update: United Arab Emirates. Chicago: Intercultural Press, Inc., 1978.
21. Millard, Stuart K. "Aircraft Characteristics for Airfield Pavement Design and Evaluation." Unpublished technical report, Air Force Engineering and Services Center, Tyndall AFB, FL, Jan 1983.
22. Mostyn, Trevor, ed. Saudi Arabia: A MEED Practical Guide. London: Middle East Economic Digest, 1981.
23. New International Atlas, The. Chicago: Rand McNally & Company, 1981.
24. Nyrop, Richard F., ed. Area Handbook for Egypt. Washington: Government Printing Office, 1976.
25. _____. Area Handbook for Persian Gulf States. Washington: Government Printing Office, 1977.
26. _____. Area Handbook for Saudi Arabia. Washington: Government Printing Office, 1977.
27. _____. Area Handbook for the Yemens. Washington: Government Printing Office, 1977.
28. Operational Navigation Chart, ONC H-4. St. Louis: Defense Mapping Agency Aerospace Center, 14 Aug 1981.
29. Operational Navigation Chart, ONC H-5. St. Louis: Defense Mapping Agency Aerospace Center, 22 May 1975.
30. Operational Navigation Chart, ONC H-6. London: HMSO, 17 Jan 1980.
31. Operational Navigation Chart, ONC H-7. St. Louis: Defense Mapping Agency Aerospace Center, 3 Apr 1981.
32. Operational Navigation Chart, ONC J-5. St. Louis: Defense Mapping Agency Aerospace Center, 23 Jun 1981.
33. Operational Navigation Chart, ONC J-6. London: HMSO, 27 Oct 1981.
34. Operational Navigation Chart, ONC J-7. London: HMSO, 15 Jun 1977.

35. Operational Navigation Chart, ONC K-5. St. Louis, Defense Mapping Agency Aerospace Center, 12 Aug 1981.
36. Operational Navigation Chart, ONC K-6. St. Louis: Defense Mapping Agency Aerospace Center, 25 Sep 1981.
37. Supplement, Europe, North Africa, and Middle East, DOD Flight Information Publication (Enroute). St. Louis: Defense Mapping Agency Aerospace Center, 17 Mar 1983.
38. Takahishi, K. and H. Arakawa, eds. World Survey of Climatology, Volume 9: Climates of Southern and Western Asia. Amsterdam: Elsevier Scientific Publishing Company, 1981.
39. Thomas, Captain Jeff, USAF. Instructor, School of Civil Engineering, Air Force Institute of Technology, Wright-Patterson AFB OH. Personal interview. 9 February, 1983.
40. USA Corps of Engineers. Troop Construction in the Middle East. Washington: Government Printing Office, December 1982.
41. USAF Foreign Clearance Guide, Africa and Southwest Asia. St. Louis: The Defense Mapping Agency Aerospace Center, October 1982.
42. U.S. Department of the Air Force. Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program. AFR 93-3. Washington: Government Printing Office, 10 August 1979.
43. _____. Air Force Civil Engineering Prime Base Engineer Emergency Force (BEEF) Program. AFR 93-3. Washington: Government Printing Office, 22 December 1982.
44. _____. Functional Management Inspection of Civil Engineering Contingency Readiness, PN 81-612. Air Force Inspection and Safety Center, 8 January 1982.
45. Walker, Jane, and Mark Ambrose, eds. Business Traveller's Handbook: A Guide to the Middle East. New York: Paddington Press Ltd., 1981.
46. Webster's New Geographical Dictionary. Springfield, Massachusetts: G. & C. Merriam Company, 1980.
47. Wissler, Captain John E., USMC. Student, Graduate Engineering Management, Air Force Institute of Technology, Wright Patterson AFB OH. Personal interview. 8 April 1983.
48. Worldwide Airfield Climatic Data, Africa (Northern Half). Washington: USAF Environmental Technical Applications Center, December 1968.

49. Worldwide Airfield Climatic Data, Middle East (Revised). Washington: USAF Environmental Technical Applications Center, December 1968.

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